SPRECKELS

SUGAR BEET

BULLETIN

Vol. 26 1962

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		SPRECKELS SUGAR BEET BULLETIN	
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PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 26 JANUARY-FEBRUARY, 1962 NO. 1

MACHINE THINNED BEETS

have become the rule rather than the exception.

BLOCKING

THINNING

WEEDING

have been mechanized by growers who adapted existing tools to their own special conditions. See "Notes From Our Field Men".

AMERICAN SOCIETY OF SUGAR BEET TECHNOLOGISTS MEETS AT DENVER

ON ALTERNATE YEARS, the American Society of Sugar Beet Technologists assembles to present the results of research and development work in the fields of agronomy, genetics and variety improvement, entomology and plant pathology, agricultural engineering, and chemistry and factory operations. The Society held its 12th general meeting at the Cosmopolitan and Brown Palace Hotels at Denver on February 5th, 6th, 7th and 8th with a record attendance of over 500 scientists, technologists and operating men from the beet sugar industry.

The section on Agronomy concerned itself principally with presentations of the many influences on sugar beet yields, quality and sugar content. Results of extensive experiments were presented which point up the influence of fertilizer-irrigation interrelations, planting and harvest dates. A very complete coverage of chemical weed control progress was also presented.

The section on Genetics and Variety Improvement included some presentations of a highly technical nature relating to the theoretical aspects of sugar beet seed breeding. Detailed reports on progress being made with all of the techniques of variety improvement were given.

The section on Entomology and Plant Pathology encompassed presentations which stressed the influence on yield and sugar content of the virus diseases, as well as the effects of fungus and soil borne organisms.

The Agricultural Engineering section concerned itself principally with planters, seed processing and techniques for the application of chemical weedicides.

The section on Chemistry and Factory Operations covered the latest advances in the production of high quality sugars from sugar beets. Perhaps in no other section was it so clearly revealed that the sugar processing industry is succeeding because of the most highly sophisticated technology.

ROBERT H. SHIELDS, President and General Counsel, United States Beet Sugar Association, presented the keynote address at the Denver Meeting of the American Society of Sugar Beet Technologists.

Mr. Shields said in part, "Last year's sugar beet crop was a disappointment in a great many parts of the United States. The yield of beets per acre in 1961 was the lowest since 1955. The average sugar content looks as if it will turn out to be the lowest in 25 years. The poor crop resulted from a combination of factors that could not be controlled—an unusual combination of natural adversities covering much of the beet area the like of which this industry has seldom experienced, on such a widespread scale, all in a single crop year."

SPRECKELS AGRICULTURAL STAFF ANNUAL MEETING AT MONTEREY

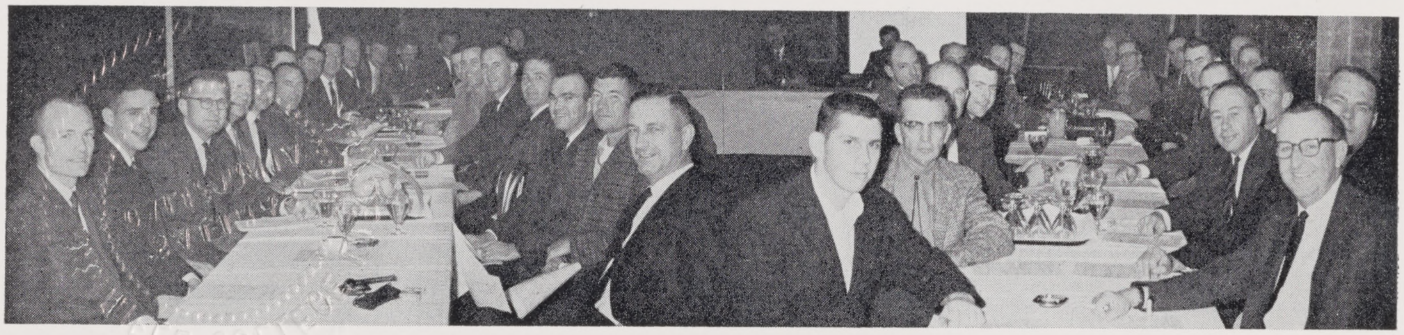
THE TRADITIONAL annual meeting of the agricultural staff of the Spreckels Sugar Company was held January 30th and 31st, and February 1st and 2nd at Monterey.

The first day's program was devoted to an informal discussion of all agronomic problems affecting sugar beet production, with stress on insects, diseases and fertilizer and irrigation practices.

Contributing to this very instructive symposium were Professors Harry Lange and Lysle Leach, Dr. F. J. Hills, Extension Agronomist (all of the University of California at Davis), and Dr. C. W. Bennett of the USDA Sugar Research Station at Salinas.

The following two days were spent in discussing all aspects of Agricultural Department functions together with some very fine reports on work being done by the agricultural research staff. Results of studies were presented which covered fertilizer and water interrelationship, growth studies with regard to planting and harvesting dates, and the influence of insects and disease on yields, sugar content, and purities. Of particular interest was a study on production costs for sugar beets.

The fourth day was devoted to presentations by the heads of Sales and Operating Departments.



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All members of the Spreckels Sugar Company Agricultural Department met at Monterey. Informal discussions as well as learned presentations marked the four-day meeting.

PESTICIDES FOR SUGAR BEETS

By DR. RUSSELL T. JOHNSON
Director of Research, Spreckels Sugar Company

SUGAR BEET GROWERS contracting with Spreckels Sugar Company in 1961 and 1962 have had attached to their sugar beet contract a rider limiting the Company's responsibility to accept beets only from those growers who have applied pesticides to their crops in accordance with the limitations set forth by the Pesticide Regulation Branch of the United States Department of Agriculture.

We present herewith a listing of chemicals (classified as to their purpose) which have been cleared for use on sugar beets in Northern California.

This table is not recommended as a blanket recommendation of the materials shown. It is simply a list of the materials that can legally be used on sugar beets, showing type of application, rate and limitations.

A pesticide is a material applied to sugar beets to reduce, destroy or prevent certain pests in the sugar beet crop. There are several classes of these pesticides. These may be herbicides, fungicides, or insecticides. (The insecticides could also include products used to control nematodes.) These products are adapted for foliar application, seed treatment, or soil applications. The objective of all of them is to protect or cure problems in beet seed or growing sugar beets. These materials, to be effective, all require contact with the beets themselves or the soil in which they are grown. Under some conditions this contact is of concern because of the extremely

Continued on Page 8

PESTICIDE CHEMICALS FOR USE ON SUGAR BEETS

INSECTICIDES

COMMON NAME	TYPE OF APPLICATION	APPLICATION RATE	LIMITATION
BHC (Technical)	Foliar	0.3 lbs. Actual/A. of gamma isomer	Do not feed treated forage to dairy animals or animals being finished for slaughter.
DDT	Foliar	10.0 lbs. Actual/A.	Do not feed treated tops to dairy animals or animals being finished for slaughter. Disregard caution if application is made at time of planting or before.
Diazinon	Foliar	0.5 lbs. Actual/A.	60 days prior to harvest. Do not feed treated tops to livestock.
Dibrom	Foliar	1.0 lbs. Actual/A.	5 days prior to harvest.
Dieldrin	Seed Treatment	0.5 lbs./100 lbs.	Do not use as food or feed.
Dimite	Foliar	1.0 lbs. Actual/A.	Do not apply within 60 days of harvest. Do not apply more than once per season. Do not feed treated tops to livestock.
Di-Syston	Foliar	1.0 lbs. Actual/A.	30 days prior to harvest.
Dylox (Dipterex)	Foliar	1.5 lbs. Actual/A.	14 days. Do not feed tops to livestock which have been treated within 28 days of harvest.
Endrin	Foliar	0.4 lbs. Actual/A.	60 days if tops are to be fed to animals; 20 days if tops are to be plowed under at harvest or are to be composted.
EPN	Foliar	1.0 lbs. Actual/A.	21 days.
Kelthane	Foliar	6.0 lbs. Actual/A.	60 days. Do not feed treated tops to livestock. Limited to Northwest.
		1.2 lbs. Actual/A.	21 days. Do not feed crop residues (tops) to dairy animals or meat animals.
Lindane	Foliar	0.5 lbs. Actual/A.	Do not feed treated tops to dairy animals or animals being finished for slaughter.
Malathion	Foliar	2.5 lbs. Actual/A.	7 days if tops are to be used for food or feed.
Methoxychlor	Foliar	5.0 lbs. Actual/A.	7 days if tops are to be used for food or feed.
Methyl Parathion	Foliar	0.375 lbs. Actual/A.	Do not apply within 20 days of harvest or within 60 days of harvest if tops are to be fed to livestock.
Parathion	Foliar	0.8 lbs. Actual/A.	15 days prior to harvest.
Phosphamidon	Foliar	1.0 lbs. Actual/A.	30 days.
Sevin	Foliar	2.0 lbs. Actual/A.	14 days prior to harvest.

Continued Overleaf

PESTICIDE CHEMICALS FOR USE ON SUGAR BEETS

INSECTICIDES (continued

COMMON NAME	TYPE OF APPLICATION	APPLICATION RATE	LIMITATION
Systox (Demeton)	Foliar	0.5 lbs. Actual/A. on beets 5.0 lbs. Actual/A. on tops, or pulp	Do not apply within 30 days of harvest. Do not apply more than 3 times per season.
Thimet (Phorate)	Soil Treatment	2.0 lbs. Actual/A.	Apply as a spray to seed in row at planting time.
		1.0 lbs. Actual/A.	Granular formulations. Apply by drilling or broadcasting. No limitations. Not registered for foliar application in Northern California.
Thiodan	Foliar	1.0 lbs. Actual/A.	Do not feed treated tops to livestock.
Toxaphene	Foliar	3.0 lbs. Actual/A.	60 days. Do not feed treated tops to dairy animals. If meat animals are treated with toxaphene for external parasites, remove tops from diet 6 weeks prior to slaughter.
Trithion	Foliar	0.5 lbs. Actual/A. (Spray) 1.0 lbs. Actual/A. (Dust)	14 days prior to harvest.

FUNGICIDES

COMMON NAME	TYPE OF APPLICATION	APPLICATION RATE	LIMITATION
Arasan (Thiram)	Seed Treatment	4.0 oz./100 lbs.	Seed treatment (slurry).
		2.1 oz./100 lbs.	Seed treatment (dry). Do not use treated seed for food or feed.
Captan	Seed Treatment	9.0 oz./100 lbs. 9.6 oz./100 lbs.	Seed treatment (dry). Seed treatment (slurry). Do not use treated seed for food or feed.
Ceresan (New Improved)	Seed Treatment	8.0 oz./bu.	Do not use treated seed for food or feed.
Dexon	Seed Treatment	4.2 oz./100 lbs.	Do not use treated seed for food, feed or oil.
Hydroxy-Mercuri-Chlorophenol	Seed Treatment	3.0 oz./15 lbs.	Do not use treated seed for food or feed.
Manzate (Maneb)	Seed Treatment	10 oz./100 lbs. of seed as a dust	Do not use treated seed for food or feed.
	Foliar	2.4 lbs. Actual/A.	30 days. Do not feed treated forage to livestock.
Methyl Mercury Hydroxide	Seed Treatment	1⅜ oz./bu.	Seed treatment only (slurry). Do not use treated seed for food, feed or oil.
Nabam	Foliar	2 qts. + 1 lb. zinc sulfate/100 gals. Use 75-125 gals./A.	30 days. Do not feed treated tops to dairy animals or livestock.
Pano-drench	Seed Treatment	0.09/100 lbs.	Seed treatment by slurry or liquid treater. Do not use treated seed for food or feed.
Panogen	Seed Treatment	4 oz./100 lbs.	Seed treatment (slurry). Do not use treated seed for food, feed or oil.
PCNB	Seed Treatment	2.8 oz./100 lbs.	Seed treatment (slurry). Do not use treated seed for food or feed.
Phygon (Dichlone))	Seed Treatment	2 oz./100 lbs.	Seed treatment (dry). Do not use treated seed for food or feed.
Zineb	Seed Treatment	1.3 oz./100 lbs. Use with Captan	Seed treatment (dry).
		3.0 oz./100 lbs. Use with Captan	Seed treatment (slurry).

PESTICIDE CHEMICALS FOR USE ON SUGAR BEETS

FUMIGANTS

COMMON NAME	TYPE OF APPLICATION	APPLICATION RATE	LIMITATION
D-D Mixture (Vidden-D)	Pre-plant Soil Treatment	200-300 lbs. Actual/A.	Wait 1 week before planting for each 10 gallons/acre applied; longer in case of heavy rains or temperature below 60° F. Do not treat extremely heavy soils. Do not apply near living plants.
EDB (Ethylene Dibromide)	Pre-plant Soil Treatment	36-77 lbs. Actual/A.	Allow 1-2 weeks to lapse between time of application and planting.
Methyl Bromide	Soil Treatment	3.0 lbs./1000 cu. ft.	Expose to fumigation for 4 hours.
Telone (Dichloropropenes)	Pre-plant Soil Treatment	202 lbs. Actual/A.	Allow 2-3 weeks to lapse between time of application and planting, or until odor has left soil. Do not treat extremely heavy soils.
Vorlex	Pre-plant Soil Treatment	95 lbs. Actual/A. (on light soil)	Expose to fumigation for 4 days and aerate for an additional 7 days for each 23 lbs./acre used.
		114 lbs. Actual/A. (on heavy soil)	

HERBICIDES

COMMON NAME	TYPE OF APPLICATION	APPLICATION RATE	LIMITATION
Avadex	Pre-plant Soil Treatment	2.0 lbs. Actual/A.	Pre-plant soil incorporation to depth of 1-2 inches immediately after spraying.
Barban	Foliar	.75 lbs. Actual/A.	Apply when wild oats are in 2-leaf stage (4-9 days after emergence). Do not apply later than one month after crop emerges). Do not allow livestock to graze treated fields until after crop is harvested.
Chloro IPC	Soil Treatment	6 lbs. Actual/A.	Pre-emergence soil treatment.
Dalapon	Foliar	6.6 lbs. Actual/A.	Post emergence. Apply when beets emerge as directed, spray until the 4-leaf stage.
Dichloral Urea (DCU)	Soil Treatment	7.3 lbs. Actual/A.	Pre-emergence soil treatment. Soil incorporation 2" deep at time of planting.
		14.6 lbs. Actual/A.	Pre-emergence. No soil incorporation at time of planting.
DNAP—DNBP (Sinox General plus Dow General)	Soil Treatment	1.5 lbs. Actual/A.	Pre-planting application.
Endothal	Soil Treatment	6 lbs. Actual/A.	Pre-plant soil treatment incorporation to depth of 2 inches. Do not feed tops of treated beets to livestock.
IPC	Pre-plant	5 lbs. Actual/A.	Apply 1-2 days before planting. Disc into top 4 inch soil.
	Foliar	6 lbs. Actual/A.	Post-emergence. Apply when sugar beets are well rooted.
IPX	Soil Treatment	9.1 lbs. Actual/A.	Pre-emergence soil treatment.
Pentachlorophenol	Soil Treatment	4 lbs. Actual/A.	Pre-emergence. Apply two days before emergence of sugar beet seedlings. Repeat with 5-6 treatments as perennial weeds reappear and before 2 inches high.
Propyl ethyl-n-butylthiolcarbamate	Pre-plant	4.0 lbs. Actual/A.	Pre-plant soil application mixed with 2-4 inches of soil.
TCA	Soil Treatment	9.0 lbs. Actual/A.	Pre-emergence soil treatment. Do not use treated tops for food or feed.

Notes from Our Field Men

Field Superintendents report items of unusual interest so that others on the agricultural staff will have the benefit of their findings.

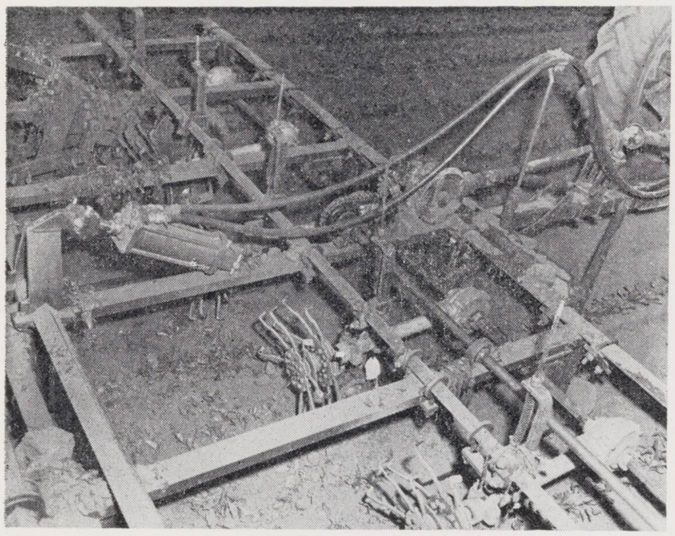
These columns, from time to time, report those items which seem to be of direct value to sugar beet growers.

BILL HODSON, WOODLAND

Superior Photo Service 3

MR. EVERETT KUNZE, one of my growers in the Dixon area, mounted a Silver Thinner on a Collier sled last year and obtained some excellent results with it. A great deal of time and effort went into this project, and Mr. Kunze deserves a great deal of credit. The thinner was converted from a regular ground-driven Silver thinning machine, and this meant that extensive calculations and experimental work were necessary in selecting the proper gear ratio for obtaining the correct rotational speed for the cutter heads.

Mr. Kunze thinned 120 acres. The stand of plants was excellent and the yield just above average for the Sucro District.



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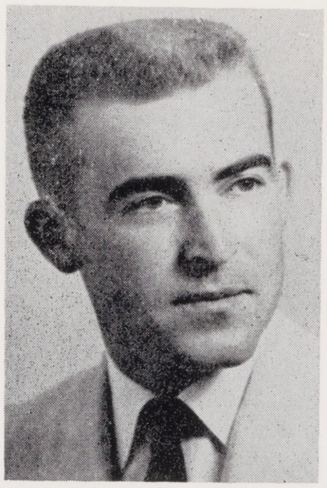
EVERETT KUNZE installed Silver tandem head thinning units on his Collier sled. They are driven by the tractor PTO through a gear box, chain reduction and jack shaft.

ART YOUNG, SPRECKELS



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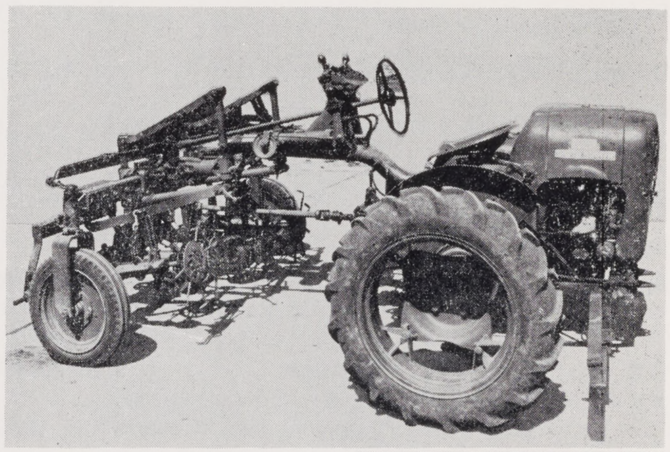
STANLEY MORISOLI of J & A Panziera was the mechanical mind behind the thinner shown below.

The thinner was originally a pull-type, ground-driven Dixie. Stanley mounted it on the front of an English David Brown 2-cycle diesel Tractor. All cutting heads are visible from the driver's seat. The lifting action for the thinner is supplied by two air rams which are actuated by a small compressor driven by the power-take-off. The thinner is driven from the power-take-off through a 3-speed Chevrolet transmission, then from a drive shaft to a Farmall cub power-take-off, thence to the cutting heads via a chain drive. Speed of the cutting heads may be varied by shifting the Chevrolet transmission (30 revolutions per 100 feet through 90 revolutions per 100 feet). The front mounting brackets are adjustable for different heights of bed by removing six bolts and raising or lowering the complete unit.

Stan has made it possible to mount precision planters on the front of the David Brown tractor for planting of monogerm seed in the coming beet seasons.



T. B. Green Photo

ABOVE — Stan Morisoli's tractor-mounted Dixie thinner.

Editor's note — a thinner, front mounted on a rear engine tractor is an almost ideal arrangement. In 1952, Spreckels Grower William Lider of Dixon, assembled the Dixie thinner and A C "Bug" shown at the right.

6

JOE HULL, MANTECA

7

We have tried the Ace blocker on several fields of beets in the Stockton area and, so far, have been well pleased with the results.

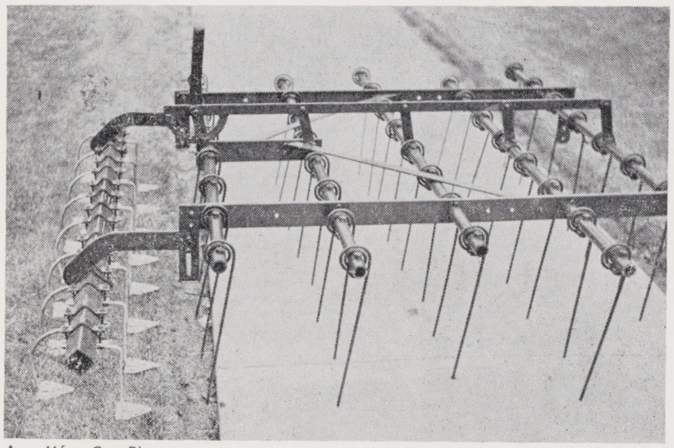
Best results are obtained if the beds are level and the stand is not too thick. Consequently, early planning for use of the Ace as with any stand reduction equipment is very important.

We feel that the results with the Ace are comparable to any down the row machine with the following advantages:

(1) Speed of operation—50 acres or more can easily be covered in one day by one tractor driver.

(2) Investment is less than for any other type of blocker.

(3) Cost per acre of operation is less than with a down-the-row machine.



Ace Mfg. Co. Photos

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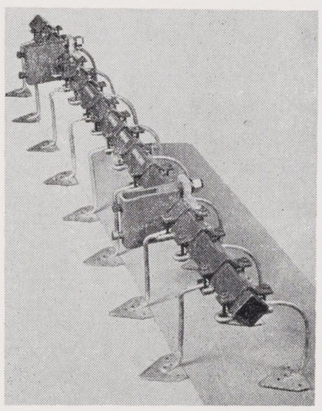
ABOVE—THE ACE spring tine harrow section includes a newly designed and very effective blocking unit with mower sections as cutting knives.



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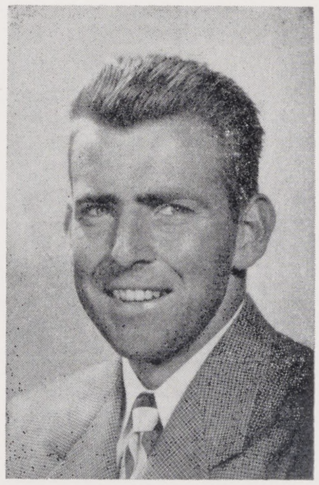
RIGHT — a detail of the ACE tool bar with adjustable blocking knives.

ERNIE MOELLER, MANTECA



Approximately 25 Lilliston Rolling Cultivators were sold to sugar beet growers in the Tracy area last season. Seldom does a new piece of farm equipment find such a general acceptance in so short a time. This may be the result of thorough testing and development in the cotton industry before its introduction into the sugar beet industry.

The Lilliston cultivator is a very versatile tool; it can cultivate in the drill row before and after there is a stand of sugar beets, as a "crust breaker," or as a weeder. It can be adjusted to throw more dirt on the beds or throw dirt away from the beets and flatten the beds.

Because of the versatility of this cultivator, I would suggest that cultivation begin when the beets are in the "two leaf" stage and, if possible, when the field is so wet that an ordinary cultivator could not work. Since this tool is adaptable to many soils and moisture conditions, a grower should try several adjustments to be certain he has the best setting for his conditions.

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THE LILLISTON Rolling Cultivator has had wide acceptance by cotton growers and is proving itself adaptable to sugar beets.

COVER NOTE — Everett Kunze of Dixon is a veteran Spreckels grower in the Davis-Dixon area. He has always been willing to try mechanical innovations in the beet field, and has consistently made them do a good job.

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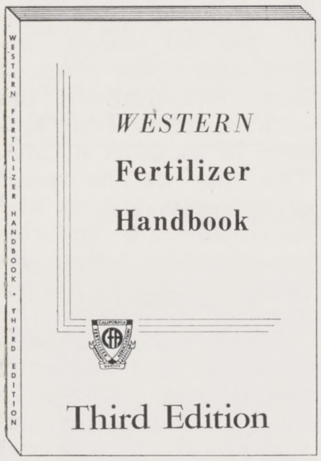
WESTERN FERTILIZER HANDBOOK REVISED



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THE SOIL IMPROVEMENT COMMITTEE of California Fertilizer Association has issued its third edition of a comprehensive book entitled Western Fertilizer Handbook.

Originally issued in 1953, the Western Fertilizer Handbook is a remarkably complete treatise on all fertilizer subjects relating to Western agriculture, California in particular. It is abundantly illustrated with excellent full color reproductions, and is a worthwhile edition to the working library of any sugar beet grower.

Copies are available at $2.00 each through fertilizer dealers, or may be ordered directly from California Fertilizer Association, Room 213, Ochsner Building, Sacramento 14.

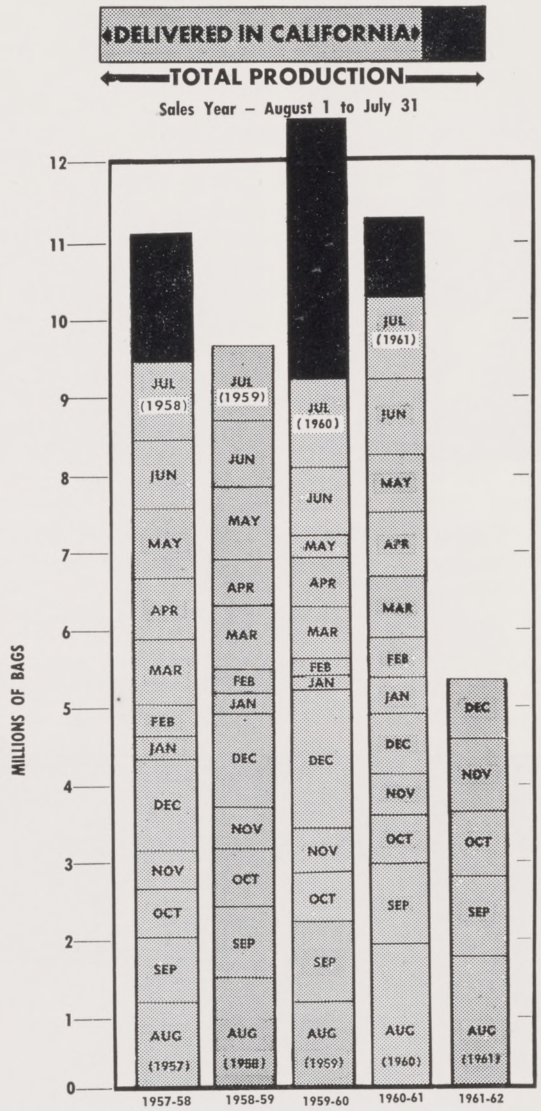
PESTICIDES

Continued from Page 3

poisonous nature of some of them.

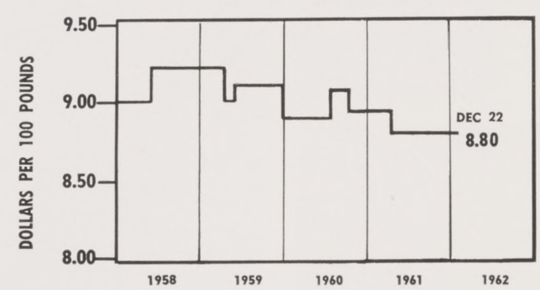
Whenever such products are used on any edible crop it is essential that such poisons do not remain with the edible portions of the plant to which they were applied, or with products produced from such plants. As a protective measure the Pesticide Regulation Branch, Plant Pest Control Division, Agricultural Research Service of the United States Department of Agriculture has been assigned the responsibility of clearing chemicals for use on edible plants before they can be authorized for commercial application. Acquiring this clearance requires experimental studies in which the potential pesticides are applied to plants and then sampled at periodic intervals to determine if pesticide residues remain, and if these residues are harmful or toxic to people or livestock which may consume all or portions of treated plants. When these residue studies have been completed, tolerances are established for the amounts of pesticide that can remain on the plants at harvest time, and the time limit prior to harvest at which the pesticide can be applied. A notification is then made that such chemicals can be used within the limits of the specifications they prescribe.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

AUSTIN ARMER, EDITOR — SPRECKELS SUGAR COMPANY — WOODLAND, CALIFORNIA

SPC - DAVIS

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SPRECKELS SUGAR BEET BULLETIN

VOL. 26 MARCH-APRIL, 1962 NO. 2

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SUGAR BEET GROWERS

are resourceful and ingenious. Rising costs have been their incentive to combine cultural operations like

LISTING

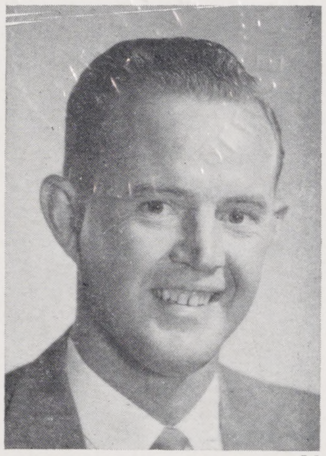
PLANTING

WEEDICIDE APPLICATION

into a single operation by designing and building machinery fitted to new methods and concepts of row crop farming.

SINGLE PLANT STANDS ACHIEVED

By VERNON D. SHERWOOD
Field Superintendent, Spreckels



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THE QUALITY of hand thinning has been getting worse and worse in recent years. A well spaced stand of single beet plants is virtually unobtainable from a "normal" prethinning stand, because clumps of plants do occur, and the labor will no longer take the time to finger-thin these to single plants.

Likewise, when mechanical thinning is employed, the problem of clumps is serious, and can be partially solved only by repeated random stand reducing methods.

Quite evidently, therefore, either hand or mechanical thinning cannot produce a well spaced stand of single plants so long as seedling clumps are present in the prethinning stand. Therefore it has become imperative to eliminate clumps of plants,—that is, to achieve single-plant stands.

The single-plant stand has been made possible through the introduction by the Spreckels Sugar Company of a sized monogerm hybrid seed—this is designated by the Company as seed Variety No. 101-H. The seed is a high-producing hybrid, with one germ to each seed ball which produces a single plant. Furthermore, the Company has processed this seed in such a manner that the small and large seeds have been removed. This leaves only a narrow range (actually only 1/32 inch) between the largest and smallest seeds.

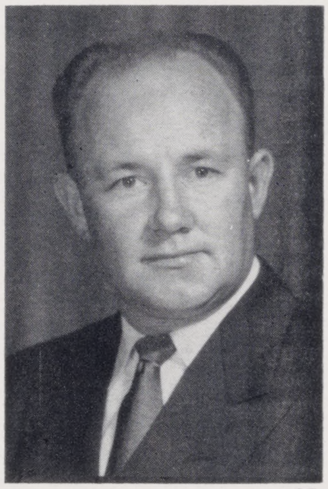
With this variety of seed we must find the proper devices and seeding rate to produce the desired single-plant seedling stand.* We have shown that all types of precision planters can be utilized to

Continued on page 16

*See "PLANTER ADJUSTMENTS TO OBTAIN SINGLE-PLANT STANDS" in this issue.

PLANTER ADJUSTMENTS TO OBTAIN SINGLE-PLANT STANDS

By GEORGE W. WHEATLEY
Agronomist, Spreckels Sugar Company



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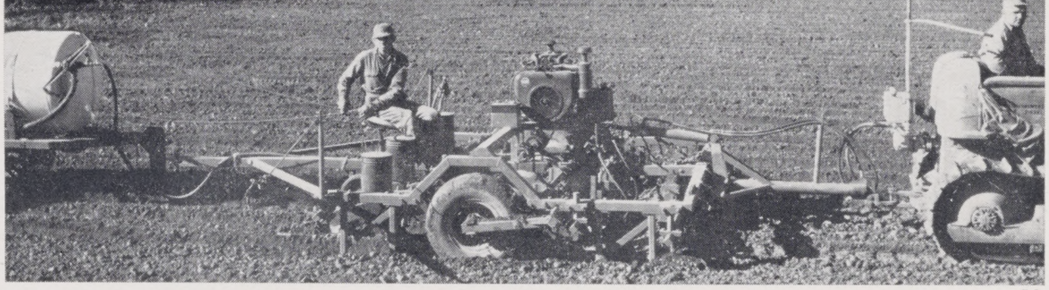
REPEATED PLANTING experiments on a field basis have demonstrated that desired seedling spacings are quite predictable when seed plates and their rotary speeds are properly selected. This conclusion has been made after observing and comparing many different stands of beets from widely different seed metering mechanisms.

Seed plates with seed cells too small will either grind the seed or fail to permit adequate cell fill. Seed plates that are too thick, or that have cells too large, admit several seeds into a single cell, resulting in a clumped distribution of the seed. Planters driven too fast contribute to poor seed distribution. *Planting faster than an easy walk means planting too fast and losing the benefit of precision mechanisms.*

Efforts toward precision planting of sugar beet seed have included coating, or pelletizing the seed to a predetermined size to obtain a more uniformly sized product. Repeated field plantings have demonstrated no more precise distribution of pelletized sugar beet seed than of the processed-treated seed being issued to Spreckels' growers. Fewer seedlings emerged (stands were less predictable) from plantings of pelleted seed plantings.

Spotty stands and/or clumped beet seedlings seriously reduce net returns from sugar beets. They cost the growers money which in most cases could be saved. To assist in planting our sugar beet seed with as much precision as possible, we present a tabulation of plate numbers and gear (or sprocket) ratios for three makes of planter. (*Top of next page.*)



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COVER NOTE — Joe Schneider, Woodland beet grower, used an early model Johnson sled as the foundation for this planting combine. It forms the beds, rotary-tills (Byhoe) the seed beds after spraying on Tillam from the tagalong tank, and finally plants the seed with John Deere 70-D planter units on four rows.

PLATE NUMBERS AND SPROCKET (OR GEAR) RATIOS FOR MULTIGERM AND MONOGERM SEED

JOHN DEERE No. 70 FLEXI-PLANTERS

SEED TYPE	PLATE NUMBER
Multigerm	B-12734-B
Monogerm	B-12733-B 46487R1*

INTERNATIONAL No. 185 PLANTERS

SEED TYPE	PLATE NUMBER
Multigerm	621972-R1
Monogerm	3639A 463429R1*

*These plates should also be satisfactory.

MILTON PLANTERS

SEED TYPE	SEED WHEEL CELL DIMENSION
Multigerm	11-8-9
Monogerm	10-7-7½

SEEDING RATES OF 6, 8 & 10 SEEDS PER FOOT ARE SHOWN BELOW WITH THE CORRESPONDING SPROCKETS OR GEARS TO OBTAIN THESE SPACINGS

JOHN DEERE PLANTERS

	NO. 66 PLANTER		NO. 70 FLEXI-PLANTER	
Seeds Per Foot	Drive Axle Sprocket	Feed Shaft Sprocket	Drive Axle Sprocket	Feed Shaft Sprocket
6	12	9	11	14
8	12	7	22	20
10	18	8	20	14

72 Cells Per Seed Plate on J. D. Flexi-70 and No. 66 Planters

INTERNATIONAL PLANTERS

	NO. 185 PLANTER		NOS. 40 & 60 PLANTER	
Seeds Per Foot	Drive Axle Sprocket	Feed Shaft Sprocket	Feed Shaft Sprocket	Aux. Counter Shaft Spkt.'
6	11	14	10	17
8	22	20	8	17
10	14	11	6	17

82 Cells Per Seed Plate on International 185 Planters

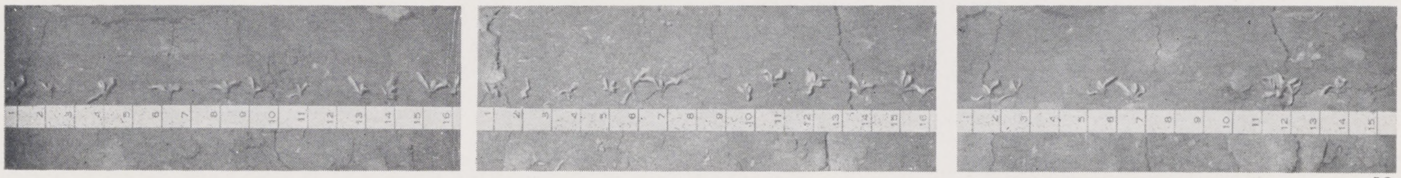
MILTON PLANTER

Seeds Per Foot	Gears for 180 Cell Wheel
6	7-Tooth
8	9-Tooth
10	11-Tooth

180 Cells Per Plate

For Other Planters, Comparable Settings Should Be Determined and Utilized in Planting 6, 8 or 10 Seeds per foot.

IF YOU PLANT FASTER THAN AN EASY WALK, YOU ARE PLANTING TOO FAST AND LOSING THE BENEFIT OF PRECISION PLANTING



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4 Miles per hour — 6 Miles per hour — 7 Miles per hour

PLANTING SPEED is of greatest importance in placing monogerm seed with uniform spacing. The benefits of monogerm seed and precision planting are lost at speeds over 4 miles per hour. Slower speeds give even better results—3½ miles per hour should be considered maximum for precision planting.

COMBATING "NITROGEN NEGLIGENCE"

By JOHN McDOUGALL

Field Superintendent, Spreckels Sugar Company

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AS EACH SEASON goes by, more and more stress has been placed upon nitrogen's role in the making of sugar from sugar beets. Our company views with alarm our growers' random use of nitrogen to stimulate greater yields of sugar beets at the expense of sugar content and quality of the beet root.

From experience, the strip treatment with various levels of nitrogen has proved the most reliable method to determine the crop's nitrogen requirements. Yet on longer fields, it indicates only the conditions that exist in the vicinity of the strip. Also, these strip indicators may be somewhat masked by disease symptoms.

This season I had an opportunity to use a very simple and yet very indicative system of nitrogen investigation. It is the old Bray* system of color indication. It gives color changes for very low NO_3 ppm, mid-range NO_3 ppm and high NO_3 ppm. This test only takes a few minutes to perform. Thus, if necessary, one can readily check his results, if in doubt. I will report on four case histories.

Robert Button — two 100 acre fields

These two fields were adjacent to each other. They are the same soil type, but had different crop histories.

Field "A" had nothing but grain and rice for many years.

Field "B" had the same previous history except in the last 8 years, there had been two beet crops, one tomato crop and one bean crop. Interspaced between these crops were grain crops. These fields were planted the first of April and it was the grower's intention to overwinter these fields. Mr. Button had applied 75 units of N as a preplant and 100 units of N following thinning to both fields. During the latter part of August, both fields began to yellow and I took this yellowing for disease symptoms. I took a petiole sample and found it fairly low in NO_3. Since Mr. Button had put on 175 units of N. I could

Continued on next page

not accept this. So in September, I took some more petioles and found that I got zero ppm of N. I immediately checked petioles again and verified these results.

Mr. Button then applied 75 additional lbs., and the crop greened up and continued to grow into the winter.

It is my opinion that this field suffered needlessly. If an indicator strip had been present the N shortage would have been suspected and this shortage could have been very easily verified by this simple petiole test.

Peter Porterfield — 160 acres

Previous crop history was grain for many years, and an abandoned tomato crop previous to the 1961 beet crop.

Due to this heavy grain history, Mr. Porterfield preplanted with 100 units of N plus some phosphate. Following thinning, another 100 units of N were applied. Since I had this low fertility problem with Mr. Button, I checked Mr. Porterfield's crop in September and noticed small spots where the fertilizer applicator had failed to function. These spots were apparent all across the field. Previous to this, the crop had nothing but huge green foliage. I petiole-sampled across the field and found it low in NO_3. Since it was so late, Mr. Porterfield applied an additional 50 units of NO_3 nitrogen. Again in January, the field has turned light in color and the spots have again appeared. Sucrose samples taken in October and again in November were 13.8% and 14.4%. Sucrose samples taken the middle of January showed 16.2%.

Mr. Porterfield's unintentional spot treatment made me suspicious of a NO_3 deficiency, and the use of this fast Bray* test convinced me of the NO_3 shortage in time to do something about it.

W. L. Isham's 65 acres

Mr. Isham planted this field late in February. Previous history was tomatoes, beets, barley and alfalfa.

This field turned yellow early and remained yellow throughout the season. I checked petioles on this field throughout the year, and although they dropped as the season progressed, they were never very low. I would say in the 2000 ppm range. The crop when harvested made only 11 tons and 12.7% sucrose.

In my opinion Mr. Isham did an excellent job of farming, and adding more fertilizer would have just cost more money without improving yield, since yield and sugar were governed by adverse factors other than fertility.

Buchignani and Hughes

This field was planted on May 15th. Previous crop history was vetch cover crop, wheat, vetch cover crop, rice and before this were years of grain.

Due to the two years of vetch, Buchignani and Hughes put on only 100 units of nitrogen. In August, this field also took on a yellow appearance except for border effects. We took petiole samples and found very little nitrogen. The first of September, Buchignani and Hughes applied approximately 50 units of NO_3 nitrogen. During November, these beets again started to yellow and sugar content leveled off at 17+%. This field was in our growth study, so that a good record of sugar content was available, and is here recorded:

DATE	SUCROSE	DATE	SUCROSE
8/10/61	11.8%	10/13/61	15.9%
8/31/61	13.7%	11/23/61	17.4%
9/20/61	14.7%	12/11/61	17.1%
10/9/61	14.2%	1/26/62	17.2%

It is quite apparent that 100 units of N was not enough to grow this crop under the natural fertility conditions that prevailed. The timely application of additional nitrogen did not suppress sugar content or beet quality, and Buchignani and Hughes benefited by its application.

Since the Bray* petiole test is so simple to use, I see every reason for growers to use this method of nitrogen control. I believe they would make excellent use of this "tester" on their beets, as well as other crops, and with this overall use in mind would have a more concrete idea of nitrogen conditions on the soil which they farm year after year.

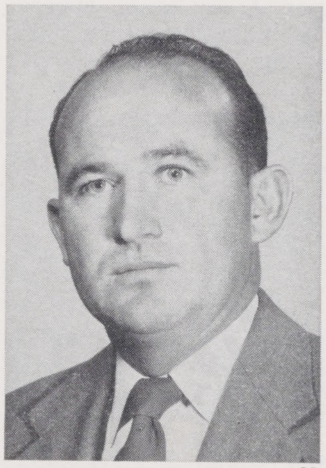
*The Bray test for petiole nitrogen can easily be performed by growers who provide themselves with a few test tubes and simple "drug store" chemicals.

Most commercial farm chemical or fertilizer suppliers will either make the Bray test or explain it so that growers can do their own petiole nitrogen testing.

GROWER PROVES NITROGEN-SUGAR PERCENTAGE RELATIONSHIP

By VIRGIL HORTON

Field Superintendent, Spreckels Sugar Company



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VIC VUINONIC, a first year grower in the Comstock area, ran his own fertilizer experiment on his 19 acre field of sugar beets this past year.

Planting date was May 31, 1961, at which time Vic applied 80 units of Nitrogen in the dry form of ammonium nitrate (33.5-0-0). In spite of a tremendous pig weed problem and exceptionally high temperatures in July, Vic completed his thinning, leaving a stand count which

THREE NEW RECEIVING STATIONS WILL SERVE SPRECKELS GROWERS

THE YEAR 1962 will witness the completion of three new Spreckels receiving stations. These are located at Elmira in Solano County, Goshen in Tulare County and Slater in Kern County.

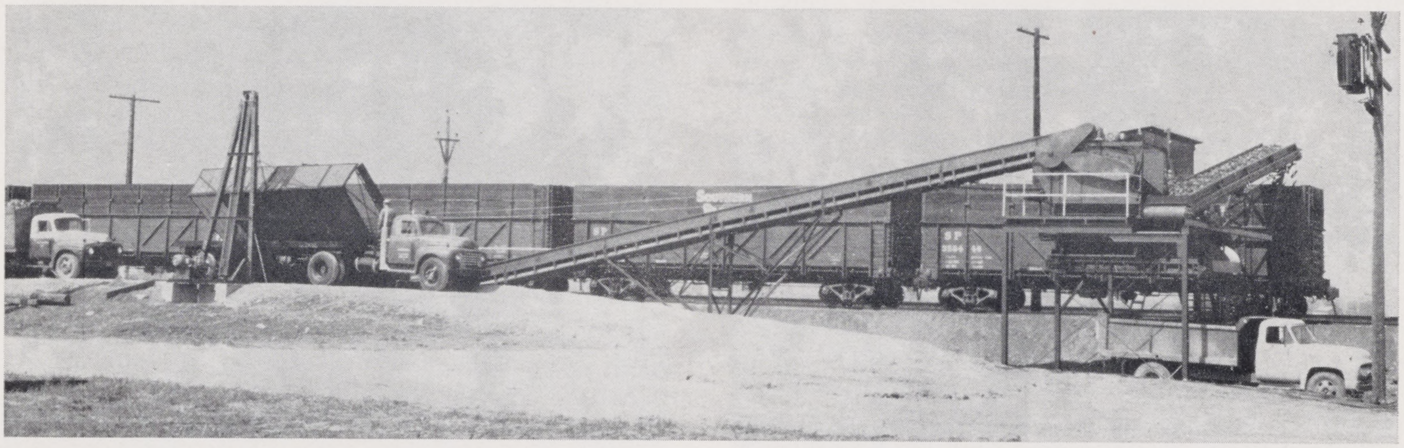
The Elmira station, announced in an earlier issue of the *Spreckels Sugar Beet Bulletin,* has been completed and put into operation for the 1962 spring campaign. This is an advanced design, capable of handling 24 rail cars at one switching and instantly convertible to the loading of transport trucks.

The other stations will be ready for operation at the beginning of the 1962 fall campaign.

REPRINTS AVAILABLE

THE JANUARY-FEBRUARY, 1962 issue of the *Spreckels Sugar Beet Bulletin* contained an article by Dr. Russell T. Johnson on pesticides for sugar beets, including an extensive tabulation of all registered weedicides, fungicides and insecticides.

We feel that this is a valuable tabulation which should be part of the reference material of all beet growers as well as others concerned with pest control. Consequently, we offer reprints of this article. The reprints are available at no charge, and requests should be addressed to SPRECKELS SUGAR BEET BULLETIN, P. O. Box 240, Woodland, California.



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ELMIRA RECEIVING STATION has been in operation since its completion on April 2.

would not have been accepted by many growers because of numerous skips.

All of the fertilizer used was applied in the dry form. His program consisted of 80 units preplant, plus additional plots applied immediately after thinning. One plot consisted of an additional 67 units of nitrogen applied with a carrier of 14-14-14. Another plot consisted of an additional 96 units of nitrogen applied with a carrier of 20-20-0. A third plot consisted of an additional 160 units of nitrogen applied in the form of ammonium nitrate (33.5-0-0). The remainder of the field received an additional 80 units of 33.5-0-0, bringing the total of nitrogen to 160 units for that portion.

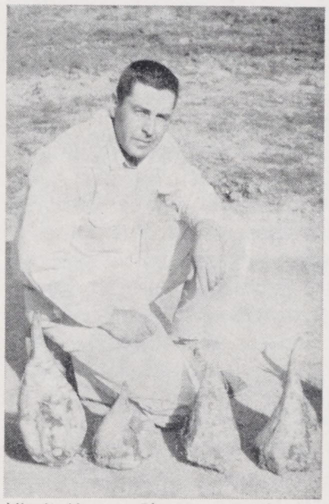
Throughout the season, 13 irrigations were applied and harvest was completed on March 26, 1962. Total production for the 19 acre field averaged 26.2 T/A with 15.5% sugar.

Beet samples taken immediately prior to harvest gave the following results in sugar percentage:

147 units N. (14-14-14) — 17.3%
160 units N. (33-5-0-0) — 16.6%
176 units N. (20-20-0) — 16.6%
240 units N. (33.5-0-0) — 15.4%

Two additional comparisons were made between the 240 unit check and the remainder of the field at 160 units. Each check was harvested separately, and the following results obtained:

UNITS OF NITROGEN	TONS PER ACRE	SUGAR %
160 (33.5-0-0)	28.2	16.6
240 (33.5-0-0)	25.8	15.7



Virgil Horton Photo 23

← VIC VUINONIC

I believe these results to be noteworthy — not merely because they show that high nitrogen leads to low sugar percentage — but also because Vic Vuinonic, growing his first crop of sugar beets, conducted a field-scale experiment which led up to an enviable crop.

MEADOW MOUSE CONTROL

By WILLIAM HODSON

Field Superintendent, Spreckels Sugar Company

24

THE AUTHOR examines the remains of a beet devoured by meadow mice.

THE CALIFORNIA MEADOW MOUSE, *Microtus californicus*, has caused substantial damage to sugar beets over the past two years in the Davis area of Northern California.

While the 1960 fall harvest was in progress, mainly in September and October, there was a meadow mouse "population explosion" in many of the sugar beet fields in the Davis area. At the time it was not known to what extent the invaders could damage the beets. By late October, it was apparent to everyone concerned that the mouse was a pest of real magnitude. Damage estimates were as high as fifteen percent.

It was assumed that the mouse activity would subside during the winter of 1960-1961, and that further damage to the overwinter beets would be negligible. This turned out to be an extremely poor assumption, for when the spring harvest began it was shockingly obvious that the mice had continued their devastation throughout the winter. Many of the fields had areas where no beets were harvested at all. The beets were so badly eaten that they were damaged to a degree that the harvester would not pick them up. Beet damage was conservatively estimated at 25%. After experiencing damage of this magnitude to the 1960 crop, the obvious question on everyone's mind was—how do we get rid of the mice once we find them? To answer the question it was decided that during the fall and winter of 1961-1962, experiments would be conducted toward the end of finding materials or methods for the control of mice in sugar beets.

Fields in the Davis area were observed for possible mouse damage, and to locate a satisfactory area in which an experiment for meadow mouse control could be conducted. But the mice were not in evidence. By the middle of December it still appeared that the overwintering beets would not be invaded. It was noted however, that many of the fields did have a small number of burrows, although no beet damage of any consequence was observed. But from December 15th, 1961 to January 31, 1962, the mouse population built up to alarming proportions in some 500 acres of beets. Actual count showed crop loss as high as 25%. This damage occurred for the most part during a 30 to 45 day period. There are approximately 2000 acres of beets that have overwintered in the Davis area this year, and practically all show some mouse damage (most of it is light and restricted to small areas). This is in contrast to the 1960-1961 period, when losses were experienced on approximately 800 acres of beets in the same area.

University of California Photo 25

MICROTUS CALIFORNICUS (meadow mouse or vole) has an appetite for sugar beets exceeded only by his ability to multiply.

An experiment was begun on a 20 acre plot on the 20th of February, 1962, to determine the effectiveness of Endrin in spray form. Endrin was applied at the rate of 4/10 of a pound per acre by air. Endrin appeared to have the best chance because when applied as a spray, the ground, as well as the beet leaves, becomes a potential killer. Endrin will

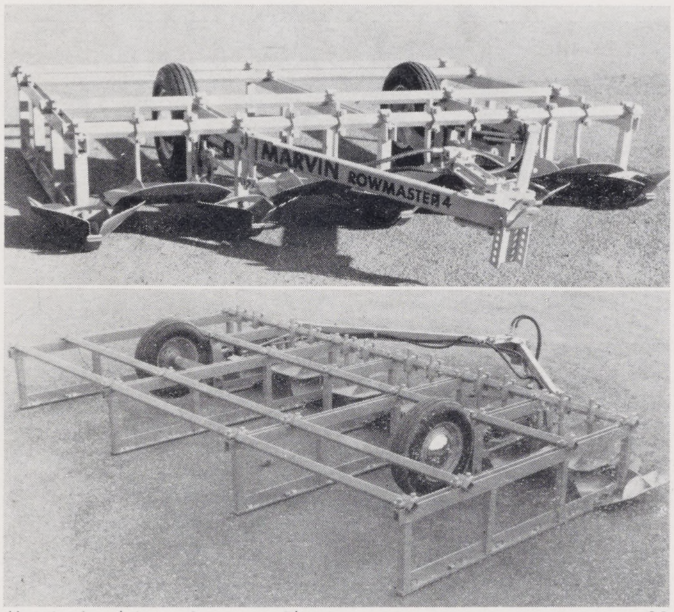
MARVIN LANDPLANE COMPANY OFFERS UNIVERSAL BED SHAPER

MARVIN LANDPLANE Company of Woodland has developed and placed on the market a universal sled, which performs both as a bed shaper and a tool carrier for planting, thinning and cultivating all row crops.

This newly developepd tool is called the "Rowmaster Bed Shaper", and has a number of unique features. The actual tools for forming the bed are individually adjustable for height, width and shape of beds; thus any shape of bed on any desired row spacing can be formed.

During the planting, thinning or cultivating operations, the bed shaper tools are removable, except that the side plates can be adjusted to fit existing furrows and act as guiding members.

Two hydraulic cylinders (one to operate each wheel) raise the sled to give 12 inch ground clearance for turning or transport. The transport wheels and their associated hydraulic lift have been designed very compactly so that they do not interfere with cultural operations..



Marvin Landplane Company Photos

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ABOVE—The Marvin ROWMASTER sled for four rows.

BELOW—The six-row ROWMASTER.

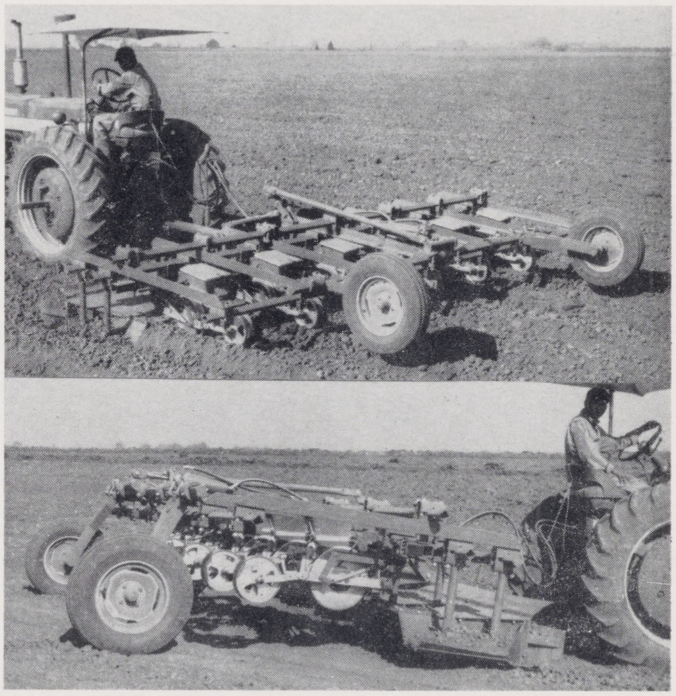
MASSEY-FERGUSON INTRODUCES UNIVERSAL ROW CROP SLED

THE FOWLER PLANT of Massey - Ferguson Inc. is now in production of the M-F 147 Sled Tool Carrier, meeting the fast growing demand caused by the swing to sled-mounted tools for bed shaping, planting, cultivating, fertilizing and thinning.

A wide range of types is offered in each of two categories—pull type or three-point hitch type. Sizes are available for 2, 4, or 6 beds, with spacings of 30, 34, 38, 40, or 42 inches.

The pull-type has a hydraulic lift, which actuates rear-mounted rubber-tired transport wheels.

Because of the great variety of row spacings, bed shapes and tool combinations in demand by row crop growers, Massey-Ferguson dealers have been provided with convenient specification blanks to convey this complex of information to the factory.



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ABOVE—The Massey-Ferguson No .147 sled tool carrier equipped with Milton planter units, planting sugar beet seed on the Chew Brothers ranch near Davis.

BELOW—the sled in the raised position, ready to turn at the headland.

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kill mice in two ways: orally and by skin absorption. The experiment showed Endrin to be effective, but has not yielded sufficiently positive results to make specific recommendations at this time. More information is needed, and the experiment will continue.

Although it is not possible to recommend a control for meadow mice at this time, it should be remembered that the chances of a long-continuing build-up of mice in any one area are remote. The potential is always present, but conditions have to be just right before populations like those experienced during the past two years can develop. Diseases and natural predators usually limit the mouse population.

However, this is cold consolation to the individual beet grower whose crop has been damaged. That is why experts at the University of California at Davis are continuing their efforts to determine positively effective control methods.

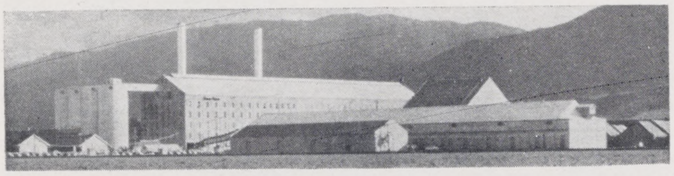
SINGLE PLANT STANDS

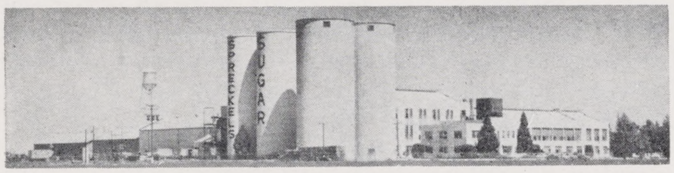
Continued from page 10

plant this type of seed. Down-the-row rate of travel also becomes very important if true precision seed drop is expected. Growers should allow themselves more time, because planters should travel no faster than a brisk walk (2½ to 3 miles per hour). In precision planting, the number of seeds per foot becomes very important. If a large number of seeds per foot are dropped, the monogerm characteristic of this seed is lost; the young seedlings emerge in a single continuous band and would be indistinguishable from multigerm seedling stand. Therefore, to achieve down-the-row separation, there must be dropped no more than 8 seeds per foot. This is not difficult with available precision drills, and is the key to successful single-plant stands.

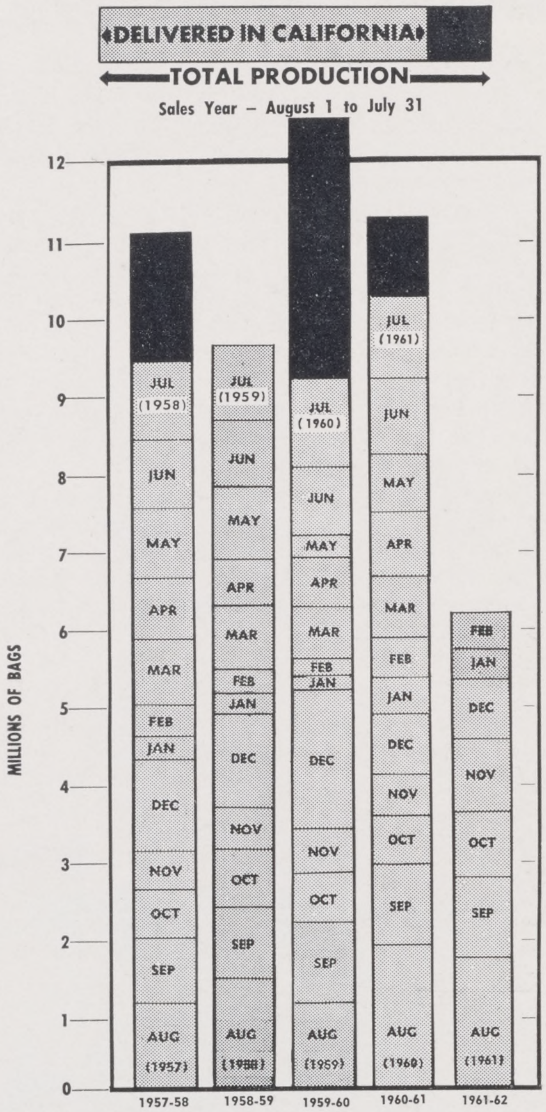
In the coastal district of California we are firmly convinced that with the introduction of Spreckels Sugar Company's hybrid Variety No. 101H, a great step forward has been made toward achieving single-plant stands. This year we have planted some 1,200 acres under adverse winter conditions. It is true that perfection has not been attained in all plantings, but generally the plantings have emerged with very good plant separation and with no serious gaps in the rows. This, therefore, leads us to believe that ever greater perfection will be attained with spring plantings.

We of Spreckels Sugar Company believe that we have, through the development of a sized monogerm hybrid seed, made an important contribution to improved quality of *both* hand and machine thinning.



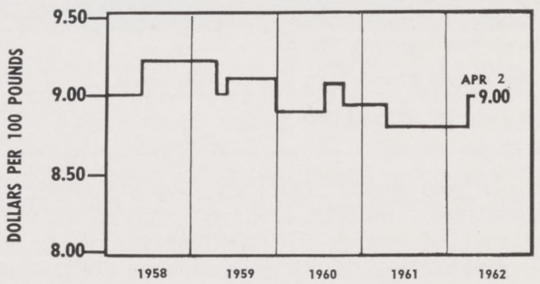


PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

AUSTIN ARMER, EDITOR — SPRECKELS SUGAR COMPANY — WOODLAND, CALIFORNIA

SPC - DAVIS

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 26 | MAY-JUNE, 1962 | NO. 3

The Sugar
BEET BULLETIN

News and notes of interest to California sugar beet growers. Published by the Spreckels Sugar Company.

Vol. 1 | MAY, 1937 | No. 1

Introducing the SUGAR BEET BULLETIN

To satisfy the demands of Spreckels sugar beet growers for last minute sugar beet information, we are inaugurating this series of monthly bulletins. While it will deal primarily with production problems, such as beet machinery, seed, diseases and irrigation methods, other phases of the industry will not be neglected. Sugar market information, the leaf hopper situation and sugar legislation are other topics to be covered. If by this means of airing problems and of exchanging ideas and experiences, progress is made in solving some of the beet problems with which you deal, then the publication will be worth while. We hope you will like this bulletin.

▾ ▾ ▾

IRRIGATION AS A MEANS OF INCREASING YIELDS

The proper use of irrigation water is probably th... factor in growing a successful crop of ... after a large part of the mon... been spent. Theref...

TWENTY FIVE YEARS

have elapsed since Vol. 1, No. 1 of the Sugar Beet Bulletin appeared. If the aims and ideals set forth in this facsimile of the Bulletin's introductory page have been fulfilled, it is because the growers of sugar beets for Spreckels Sugar Company have richly contributed to "exchanging ideas and experiences" as set forth in the first paragraph of the first Sugar Beet Bulletin.

Lombardi Photo 30

CHARLES de BRETTEVILLE

Moulin Photo 31

GUY D. MANUEL

SPRECKELS SUGAR COMPANY HAS NEW PRESIDENT

CHARLES de BRETTEVILLE, who has been president of Spreckels for the last twelve years, resigned, effective June 1st, to become president of the Bank of California. The Bank of California is one of the larger banks in the nation and is the only one that has branches in more than one state.

Under Mr. de Bretteville's leadership, the company has enjoyed a steady and substantial growth. Under his direction, the decision was made to build a new beet sugar factory. This factory, the first to be built in the United States in the last ten years, is now under construction. Technological advances in both agriculture and processing have been attained under his guidance.

Mr. de Bretteville is succeeded by Guy D. Manuel, who has been vice president of the company since 1952 and a member of the board of directors since 1959. He supervised Spreckels' agricultural operations during his term as vice president, as well as taking part in administrative and other phases of the business.

Mr. Manuel is a native of Vacaville, California, and a graduate of the University of California's College of Agriculture at Berkeley. He has been associated with Spreckels since 1939. His first responsibility with the company was as part of the field staff, and later as assistant field superintendent in the Salinas-Hollister area. In 1942 he was transferred to the Sacramento-San Joaquin area as field superintendent. In 1943 he was made assistant agricultural superintendent, and in 1944 agricultural superintendent. In 1946 he was appointed assistant district manager of the company's Sacramento-San Joaquin district, and in 1948 became general agriculturist for the company, with offices first in Sacramento and later in Salinas and then in San Francisco.

Mr. Manuel is past president of both the Beet Sugar Development Foundation, and the West Coast Beet Seed Company. He is currently a member of the U.S. Department of Agriculture's Beet Sugar Marketing Task Force, the American Society of Sugar Beet Technologists, and the statewide agricultural committee of the California State Chamber of Commerce.

Mr. de Bretteville will continue an active interest in the Spreckels Sugar Company as a member of its board of directors.

SPRECKELS BUILDING LOS ANGELES SUGAR DISTRIBUTION CENTER

By W. H. OTTEY

Vice President, Spreckels Sugar Company

Morton-Waters Photo 32

AN IMPORTANT STEP in the Spreckels Sugar Company's aggressive Western marketing program has been made. Early this month contracts were signed for the construction of a completely new sugar distribution center for our company in Los Angeles, California.

I am pleased to report that construction is already underway, and barring unforeseen delays, the new facility will be completed near the end of this year.

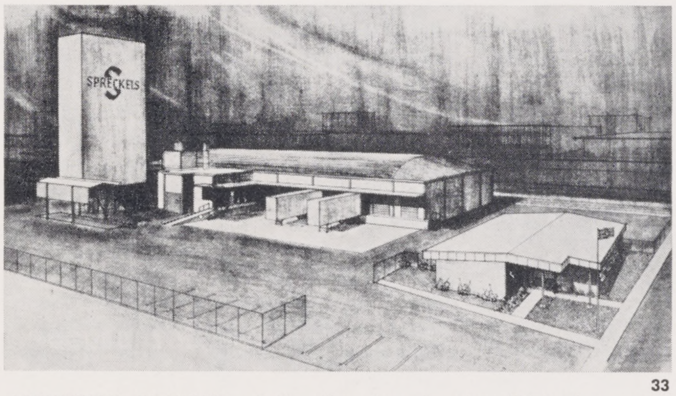
Plans call for most of the sugar to be received at the new distribution center via rail in bulk form directly from our factories.

At the Los Angeles facility, Spreckels Sugar will be packaged, manufactured into liquid sugar, or loaded into bulk trucks, as the trade requires.

To accommodate the large volume of sugar that will flow through the new sugar distribution center, Spreckels engineers have provided for the installation of loading and unloading equipment capable of handling 140,000 pounds of sugar per hour. Piping and pumps will have a liquid sugar loading capacity of 400 gallons per minute.

Among the other facilities to be installed at the site will be the Spreckels' Southern California Sales and Administrative offices and a chemical laboratory for process control.

The market to be served by the Los Angeles facility represents a tremendous challenge. Rapid poulation growth and the influx of sugar-using industries point to a favorable marketing future.



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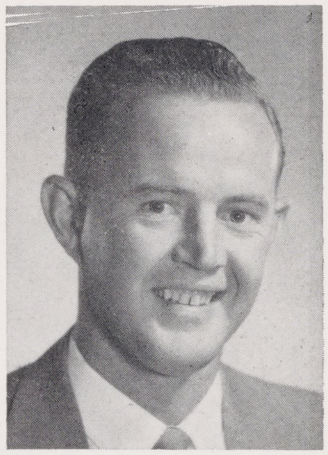
ARCHITECT'S DRAWING of the New Los Angeles distribution center for Spreckels sugar.

SINGLE-PLANT STANDS PERMIT BETTER THINNING AT LOWER COST

By VERNON D. SHERWOOD

Field Superintendent, Spreckels Sugar Company



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WITHIN District No. 1 this year, we have encouraged growers to utilize a program of precision placement of single germ sugar beet seed (monogerm variety 101-H). This was planted through precision planters at the low rate of 8 seeds per foot, at slow - down - the - row planting speeds. This program has resulted in many single plant stands that have given us an opportunity to study results after both hand and mechanical thinning.

Let me say that the two fields here are late March and early April plantings irrigated for germination. The first is a hand thinned field, thinned at a total cost of $20.10, including commission and insurance, and the workers were paid $1.00 per hour. The following results are counts after thinning:

Count Number	Total Beets Per 100 Feet	Singles	Doubles	Multiples
1	140	134	6	0
2	135	135	0	0
3	152	151	1	0
4	145	145	0	0
5	114	110	3	1
6	138	132	6	0
Average	137	134	3	0

The counting shows that 98% of the plants in this field are single beets. Furthermore, these single beets were achieved at reasonable cost.

The second field represents basicaly the same situation. Seed variety 101-H was precision-planted at a rate of 8 seeds per foot. In this case, with the achievement of the single-plant stand, the grower elected to thin the beets with a mechanical device.

The counting results show:

Count Number	Total Beets Per 100 Feet	Singles	Doubles	Multiples
1	152	117	30	5
2	106	87	18	1
3	135	101	29	5
4	161	113	40	8
5	129	101	25	3
6	150	131	15	4
Average	138	108	26	4

The results show that 78% of the beets are single. 19% are doubles and 3% multiples. This breakdown very closely approximates what growers achieve in multigerm hand thinned stands.

It is encouraging to see such results from precision planting of monogerm seed. This program promises the ultimate in low cost production of uniformly spaced sugar beet stands.

The 1961 Honor Roll

Our congratulations to the many growers in District 1 whose yields exceeded 30 tons per acre — and to those in Districts 2 and 3 whose yields exceeded 25 tons per acre.

We proudly present the growers who, in each district, produced the highest sugar per acre — the true figure of merit of a sugar beet crop.

Santi Photo 35

J. J. CROSETTI is a partner in L.C.H. Company. This is the third consecutive year that L.C.H. Company has produced over 40 tons of sugar beets per acre, with 15% or higher sugar.

Joe Hull Photo 36

CLARENCE NILSSON'S first crop of sugar beets yielded the highest pounds of sugar per acre in the Manteca District. His row crop farming experience dates from World War II.

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OJI BROTHERS, Arthur, Mas and Henry, produced not only the highest sugar per acre in the Woodland District, but also the highest yield in tons of sugar beets per acre.

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HARRY SEMAS produced the highest tonnage in the Spreckels District.

District 1—Spreckels

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Harry Semas	17	41.08	12,266
L. C. H. Company	18	40.75	12,641
Rincon Farms	18	40.20	10,605
Gerald Griffin	13	39.83	10,021
W. B. Grainger Packing Co.	79	39.69	10,613
J. L. Whitney & Son	19	39.6	11,640
O. T. Rice & Son, Inc.	21	38.89	10,174
William D. Crinklaw	88	38.86	10,453
K. R. Nutting Co.	153	38.41	8,681
John Gardoni	15	38.21	11,509
Salaberry & Guidici	58	38.08	11,645
E. John Nielsen Co.	41	37.78	10,949
R. Sargenti & Son	10	37.70	11,333
Franscioni & Griva Inc.	77	37.52	10,776
Silvio Vanoli	41	37.35	10,338
Tony Homen, Jr.	21	37.20	11,778
H. F. Trafton & Son	16	37.10	10,952
William D. Crinklaw	169	36.93	10,813
Lincoln & Ben Handley	42	36.90	11,004
Peter A. Stolich Co., Inc.	76	36.77	9,994
Peter A. Stolich Co., Inc.	46	36.54	9,354
Frank Filice	3	36.04	9,594
Edward A. Johnsen	52	36.00	10,166
Jack A. Hayes	27	35.93	11,196
Arrow Lettuce Co.	52	35.90	9,715
Alvin Noll	67	35.87	9,405
William D. Crinklaw	35	35.87	9,254
Ambrosini & Pisoni	24	35.40	9,990
Dean E. Pryor	29	35.36	10,049
Albert C. Hansen & Son	40	35.31	10,198
B. E. Johnson	20	35.20	11,243
Hansen & Fowler	44	35.18	10,491
Chas. Gianolini	34	34.99	10,259
Pryor Farms	32	34.93	10,863
Bennie Yamane	8	34.93	9,291
Jim Fanoe & Son	104	34.92	9,785
Silvio Vanoli	22	34.76	10,268
Maynard H. Frudden	8	34.71	9,566
Walter Jefferson & Son	23	34.56	8,495
O. T. Rice & Son, Inc.	22	34.50	9,636
Aldo E. Pura	100	34.33	10,889
Herold Ranches	193	34.32	10,337
Frank Wyrick	18	34.25	9,748
Latasa Bros.	86	34.12	10,482
Louie Manzoni	20	34.09	9,211

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
R. Buck Boone	13	34.02	9,390
Arrow Lettuce Co.	18	33.96	9,747
J. J. & H. Violini	18	33.91	10,383
McKinley & Nevin	31	33.83	9,540
Henry E. Corda	22	33.78	10,593
Blomquist & Silacci	28	33.73	10,632
T. G. Bacciarini	29	33.60	9,925
A. F. Silveira & Sons	9	33.54	9,995
Pryor Farms	19	33.50	9,641
John Oreggia & Co.	26	33.46	9,630
R. G. Wood	16	33.39	10,224
O. T. Rice & Son, Inc.	72	33.32	10,049
Carl M. Mortensen	26	33.32	9,450
Tom Da Rosa	82	33.21	9,843
Anthony Costa, Jr.	25	33.15	9,554
Henry Guidotti & Sons	34	33.08	8,568
George Cunha	32	33.00	10,144
A. J. Nation	19	33.00	9,847
Lindeleaf Bros.	24	32.88	8,693
W. M. Sullivan	100	32.81	9,777
A. Radavero	19	32.73	9,197
Peter Vucovich	3	32.71	9,270
J. J. Crosetti	18	32.53	8,093
Phillips Wyman	58	32.47	8,847
Jack A. Hayes	29	32.43	8,847
W. W. Johnson & Son	70	32.40	9,590
O. L. Petersen	9	32.32	10,142
Bendgard & Sconberg	87	32.28	8,619
Ambrosini & Pisoni	18	32.27	9,817
D. H. Wynne	88	32.22	8,287
Martella & Buzzini	39	32.19	9,258
Turri Bros.	69	32.05	9,807
A. F. Silveira & Sons	23	31.99	11,011
Donald F. Davies	36	31.94	9,205
Joe Merkle	40	31.85	9,574
James H. Taylor	7	31.79	9,073
O. T. Rice & Son, Inc.	52	31.71	8,955
Jack A. Hayes	70	31.68	9,358
M. L. Kalich Co.	34	31.64	8,979
Raymond Martin	248	31.62	9,568
Alden B. Andersen	85	31.54	9,052
Gerald Rianda	60	31.50	7,251
A. S. Duarte	29	31.47	9,491
E. John Nielsen Co.	18	31.27	10,131
John Oreggia & Co.	39	31.25	8,269
Schween Bros.	32	31.15	8,953
F. V. Birbeck Co.	48	31.13	8,337
Vanson Farms	45	31.09	8,637
R. Buck Boone	30	31.09	8,438
Clark & Togni	36	31.06	8,380
Growers Produce Dispatch	31	31.03	9,179
J. E. Blair	19	31.02	8,499
Hudson & Hudson	32	31.00	9,126
Franscioni & Co.	24	30.95	9,335
Porter Berry Farm	26	30.94	8,892
Peter A. Stolich Co., Inc.	18	30.93	8,104
Latasa Bros.	163	30.87	9,384
O. O. Eaton, Inc.	48	30.80	9,018
Robert Dutra	23	30.78	8,871
E. O. Parker	107	30.77	7,994
Latasa Bros.	33	30.70	8,983
G. W. Herbert & Son	46	30.61	9,024

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Roy Fultz	66	30.59	9,140
Carl Schulz	14	30.48	8,736
L. C. H. Co.	27	30.47	7,922
Bassi Bros.	31	30.45	9,403
Schween Bros	109	30.41	7,694
Bruce Church Inc.	58	30.33	9,075
West Coast Farms	12	30.31	8,366
Chas. Morgantini & Son	19	30.23	8,603
Botelho Bros.	15	30.18	8,843
C. L. & W. W. Johnson	80	30.17	8,985
Robert A Smith	41	30.11	8,617
Amussen Bros.	23	30.07	9,977
Frank Serafin	18	30.06	7,713
Clark & Romans	80	30.02	9,000
A. F. Silveira & Sons	9	30.02	9,492
Fanoe Bros. & Sons	31	30.00	9,714

AUGUST PELLEGRI and his son, Steve, produced the highest tonnage in the Manteca District.

Joe Hull Photo 39

District 2—Manteca

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
A. Pellegri & Son	37	37.04	10,312
C. A. Nilsson	20	36.77	10,759
Bogetti Bros.	34	35.19	9,501
Vincent Kovacevich	43	32.84	7,875
Nishida Bros.	61	32.68	9,222
Johnny A. Dasso	17	31.43	7,883
Joe E. Maciel & Sons	91	31.40	9,740
Zuckerman Farms Co.	35	31.03	8,167
Kiyoi Bros.	65	30.29	8,512
Sakakura Farms	40	30.25	9,722
Giannecchini Bros.	27	30.22	7,615
Hengst Farms	35	29.70	8,969
J. Howard Porter	36	29.58	8,365
F. L. Williams	23	29.57	6,109
A Pellegri & Son	40	29.33	8,629
Joe F. Soares	43	28.85	7,813
Floyd Hudiburg	32	28.83	7,380
Joe E. Maciel & Sons	47	28.63	8,297
Thomas E. Alderson	33	28.28	8,048
Robert Norman	22	28.17	8,800
Hanson & Barkley	48	28.16	8,623
Ishida Bros.	48	28.09	8,332
Les Rodgers	32	28.00	7,913
Westing & Son	87	27.87	8,673
Robert Norman	70	27.82	8,307
Joseph Widmer, Jr.	17	27.73	7,776
Louis W. Pelucca	39	27.53	7,747
Sousa Bros.	138	27.52	8,014
Albert J. Perry	43	27.40	7,645
Amerigo Sandrini	19	27.26	6,799
Joe Garone	7	27.21	7,189
H. E. Nagata	33	27.13	8,475
John L. Miller	52	27.08	8,005
Lee Roy Janzen	40	27.04	7,252
Cerro Bros.	52	26.53	6,553
Kenmar Farms	134	26.48	7,690
Kern County Union High School Farm	10	26.44	7,562
Joe Sabbatini	25	26.42	8,460
Tanaka Farms	121	26.41	8,330
N. L. Ritchey	70	26.36	7,597
Henry H. Crawford	40	26.31	7,388
Giannecchini Bros	25	26.00	6,100
W. P. Romero	24	25.93	7,234
Robert Norman	22	25.64	8,102
Dan Brandstad	40	25.59	6,249
Johnson & Moore	81	25.52	7,845
Merlin Miller	38	25.46	7,501
Enos & Woodward	20	25.42	7,504
Enrico Pizzi	3	25.29	7,875
C. F. Andresen	24	25.21	7,593
Herman Ohm	30	25.13	7,710
Eli & Vido Fabbri	26	25.11	7,859
Louis Giovannoni, Jr.	37	25.02	6,795

District 3—Woodland

Grower	Acres Harvested	Tons Per Acre	Lbs. Sugar Per Acre
Oji Bros.	50	41.85	11,450
Giger Bros.	4	36.17	9,115
Dixon Dryer Co. & Marion Sanchez	36	32.36	7,773
Ted Mata, Jr.	40	30.07	7,626
Porterfield & Stephens	159	29.46	8,437
Raycraft Bros.	46	28.62	8,351
Rudy Howald	239	28.54	8,151
Lawrence P. Hanks	29	28.34	8,202
Elwood M. Olson	73	28.04	7,318
Wilson M. Lovvorn	21	27.93	7,245
Keith B. Nelson	132	27.64	7,358
Frank E .King	61	27.18	5,958
W. M. Kimmelshue & Son	52	27.04	6,636
Henry Rerhmann	109	26.91	6,889
Chase Low	27	26,76	6,995
Willis E. Hansen	20	26.60	8,007
Evergreen Farms	22	26.19	7,103
Boodjah Singh	130	26.04	7,244
John M. Lear	88	25.97	6,503
John W. Brazil	26	25.71	5,224
Heidrick Bros.	49	25.56	5,557
Rosalind G. Criste	49	25.31	6,039
Fred H. Rehrman	130	25.12	7,350
S. Yamamoto	37	25.11	6,273
M. D. Anchita	76	25.10	6,887
Keiji Doizaki	27	25.07	6,488
Harlan & Dumars	152	25.04	6,105
K. L. Morris	129	25.00	5,978

IRRIGATION TIMING IS ESSENTIAL FOR BEST SUGAR BEET YIELDS

By LAUREN BURTCH
Agronomist, Spreckels Sugar Company

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THE PRINCIPAL reasons advanced for the decline in California's Central Valley sugar beet production since 1959 have been virus diseases, sudden and prolonged increases in temperatures, and inadequate irrigation. The question now is what is the outlook for 1962?

The disease problem can not be accurately evaluated at this time, but early observations indicate that disease will be less severe than in the 1961 season.

Temperature is a variable over which we have no direct control, but the adverse effects of sudden and unexpected temperature increases can be minimized by *good irrigation management practices.* In support of this statement, we present the results of two experiments in irrigation frequency which were conducted in the San Joaquin Valley during 1961. Both experiments were conducted on the edges of 80 acre commercial fields which were furrow irrigated. The tests, planted in January (Field A) and in March (Field B), compared three irrigation frequency treatments under four levels of nitrogen. Four replications were included in ten acre blocks. The soils were of the Panoche clay loam series. The three irrigation frequency schedules were determined *by the calendar.*

The basic schedule or "medium treatment" was designed to produce a satisfactory crop for the soil type and area. This treatment always coincided with the grower's irrigation practice on both fields, and provided water about every 14 days from June 1 until late August.

The second schedule was established to deliberately punish the crop during the month of June when irrigation demands are always high and temperatures often increase without warning. This schedule provided water every 20 to 30 days and was designed to illustrate what can happen to sugar beets when water is delayed at a critical time.

The third schedule was designed to provide water in abundance and without regard for water economics. This schedule provided for irrigation on approximate 10 day intervals during the peak period of June 1 to late August.

The nitrogen levels ranged from 50 pounds (as dry Ammonium Sulfate) to 240 pounds per acre in all of the replications.

In Field A, the wet treatment had received 5 irrigations by June 13, the medium 4, and the dry, only 2, yet no wilting had occurred at any time in any of the treatments. It seemed reasonable then on June 13 that water had been wasted with more than two irrigations. By June 14, however, after two days of 110° maximum temperatures (up from the mid 80's), the value of the extra water became obvious. Beets in the dry treatment were severly burned and wilted badly, but those in the medium and wet plots showed only slight wilting, with no leaf loss.

Furthermore, the dry beets receiving the heaviest application of nitrogen (180 to 240 pounds) were damaged more than those receiving only 50 to 130 pounds. With more frequent irrigation schedules, however, the amount of applied nitrogen did not seem important.

No water was applied to any of the plots until June 23, although irrigation was scheduled for June 16. Why the delay?—simply because the sudden change in temperature meant that it took 7 more days to complete the irrigation cycle at 110° than it did at 85°.

RESULTS OF THE EXPERIMENT

The effect of irrigation frequency and harvest date are shown graphically for the two fields; Field A and Field B in Fig. 1 and Fig. 2 below:

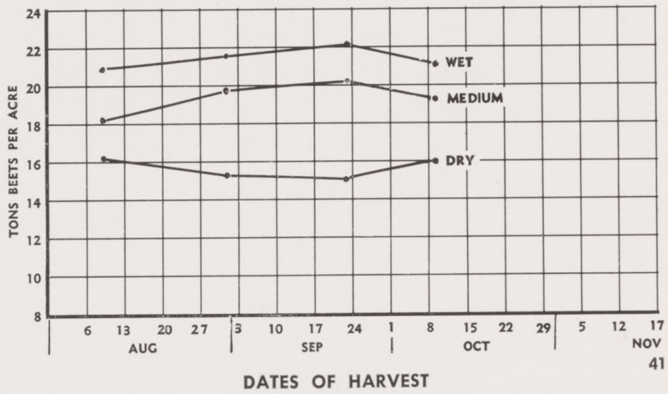

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Fig. 1 — FIELD "A" was planted in January, and plots were harvested on Aug. 10, Aug. 29, Sept. 23 and Oct. 9.
The yield of the "Dry" plots was markedly lower than either the "Wet" or "Medium," and did not improve between August 10 and August 29, as did the other two.

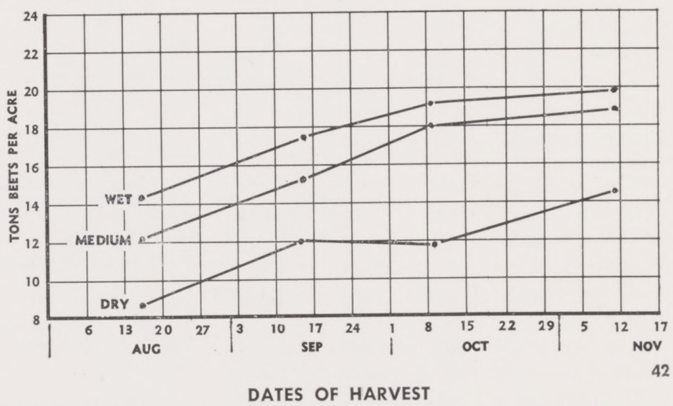

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Fig. 2: FIELD "B" was planted in March, and plots were harvested on Aug. 16, Sept. 16, Oct. 9 and Nov. 10.
Although the "Dry" plots continued to grow in August, October and November, this growth was at a far lower rate than either the "Wet" or "Medium" plot.

Several conclusions are apparent from the yield curves. First, that yields were improved in both locations by more frequent irrigation schedules. Second, in neither field were yields improved for any treatment by delaying harvest past mid-September. Moreover, the dry treatment in Field A (burned so badly in June), produced its highest yields in the August harvest, and two additional irrigations failed to improve either yield or sugar.

The third point of interest lies in the observation that in neither field did the so-called "wet" treatment produce the high yields expected from it. This seemed to be a common 1961 observation in the Central Valley.

Since the return from the crop is the main concern of both grower and processor, a comparison of the gross returns for the early harvest (August 10) with the returns from an average harvest date (September 26) seems in order. Hence we present the following tabulation:

Second, once a crop has been deficient in nitrogen for a prolonged period, there is little to be gained by continuing irrigation (50 N with 7, 9, 10 or 12 irrigations). These comparisons simply mean that *both* nitrogen and adequate moisture are essential for good production and that *neither* can be efficiently substituted for the other.

A third factor for consideration is "when to harvest?" If water is expensive and in short supply, then it is advisable to use the available water to keep the crop growing most efficiently, as long as practical and to avoid excessive use of nitrogen, striving for a fairly short term crop with a reasonable gross return.

It thus becomes evident that, for profitable sugar beet production, an irrigation schedule should be planned before the crop is planted. Under *average* conditions of soil and climate, early planted sugar beets should be irrigated two or three times prior to May 1. Beets planted after April 15, nearly always should be irrigated twice prior to thinning.

TABLE I.

THE INFLUENCE OF NITROGEN, IRRIGATION FREQUENCY AND TIME OF HARVEST ON THE GROSS RETURN FROM SUGAR BEETS SAN JOAQUIN VALLEY 1961

	AUGUST 10 HARVEST				SEPTEMBER 26 HARVEST				
Pounds Nitrogen Per/Acre	Total Number of Irrig.	Yield, Tons Per Acre	Sugar %	Gross Return at 7.25 Net	Total Number of Irrig.	Yield, Tons Per Acre	Sugar %	Net Gross Return at 7.25	Gain or Loss in Gross Return 8/10 - 9/26
	Wet				Wet				
240	10	22.8	13.0	$258	12	23.9	14.0	$292	+ $34
130	10	21.0	14.3	260	12	22.6	15.2	301	+ 41
50	10	17.3	14.9	227	12	16.8	15.9	234	+ 7
	Medium				Medium				
240	7	20.6	14.2	$254	9	22.0	15.0	$290	+ $36
130	7	18.8	14.9	246	9	22.2	15.1	294	+ 48
50	7	15.4	15.6	210	9	15.9	15.8	220	+ 10
	Dry				Dry				
240	4	16.5	14.7	$212	6	16.0	13.7	$191	— $21
130	4	15.5	16.6	227	6	14.6	15.1	195	— 32
50	4	14.9	16.2	212	6	14.3	15.5	195	— 17

It is apparent from Table I, that January planted beets receiving 7 irrigations and 130 pounds of nitrogen grossed $246 per acre by August 10 and produced an additional $48 when irrigated twice more and held until late September for a total gross of $294 per acre.

Beets receiving only 4 irrigations by August 10, grossed $227 (largely because of a favorable sucrose content), but then reduced in value to $195 when irrigated twice more and held until late September (a loss of $32 per acre). Thus is would seem that once sugar beets are severely damaged by stress, it is best to harvest them as quickly as possible.

Under the 1961 conditions, the "wet" irrigation schedule produced only slightly more gross than did the medium. (This was well illustrated in Figure 1).

There are a number of interesting comparisons that can be made from Table I. First, the results show that excessive quantities of nitrogen are wasted without adequate irrigation (50N and 240N with 4 or 6 irrigations.

From thinning on May 1 through June 10, an irrigation interval ranging from not over 16 days on heavy soils down to not over 12 on lighter soils should be satisfactory.

From June 10 through August 10, the interval should be reduced to a range between 12 and 16 days on heavy soils to 7 to 10 days on light soils.

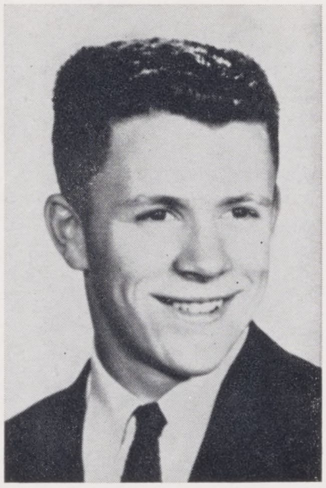
After August 15, the interval can once again be extended, and a September 1 irrigation should maintain satisfactory moisture conditions for an October or early November harvest on all but the very sandy soils.

The foregoing is a schedule which should be satisfactory for the production of a profitable crop of Sugar beets in the Central Valley of California.

Irrigating by the calendar is neither new nor perhaps the ultimate in irrigation ,but it is for most sugar beet growers the practical and reasonable answer to the always-present question, "when to irrigate."

Notes from Our Field Men

WALT TITCOMB, FRESNO



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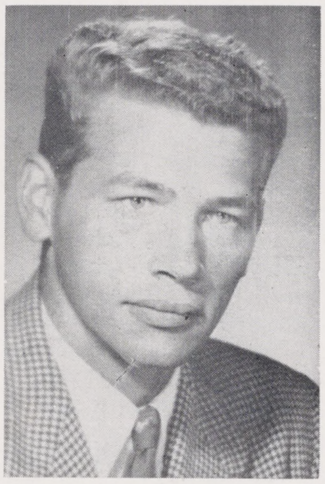
Generally speaking (and in my opinion only) it appears that far and away the poorest cultural habit is being continually late with — and short of water. Beets, being a secondary crop in this area compared to cotton, suffer accordingly. Two exceptions generally seem to follow; that of the small farmer, and the new grower. Both seem to arrive at a more reasonable and consistant rate of water application.

J. N. DAWE, STRATFORD



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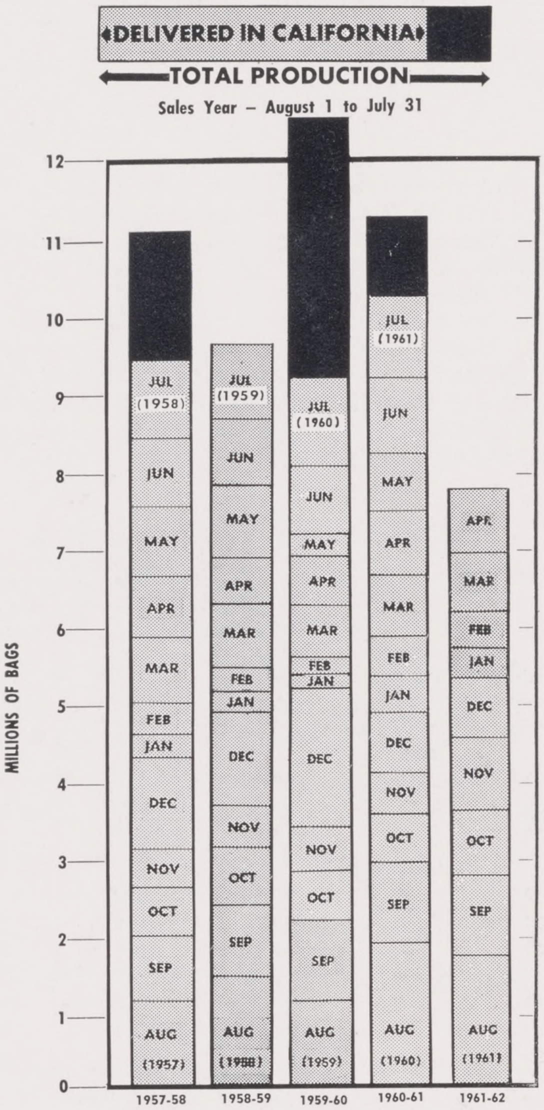
Why does one field start growing sooner than another? One answer is the temperature of the irrigation water. Dick Anderson and Hildreth Van Houten have beet fields in Tulare County, separated by only sixty feet of country road. The soil conditions and types are quite similar. Both of these men are new growers and have about the same amount of fertilizer applied to their beets and both fields were in cotton last year. The planting dates are identical, as were the thinning dates.

Then, about April 15, following thinning, both fields were irrigated. Anderson used well water and Van Houten applied water from the Tulare Irrigation District ditch. In ten days, the field irrigated with well water had top growth twice as large as the field irrigated with District water, which, this early in the year, is about 25 degrees fahrenheit cooler than the well water.

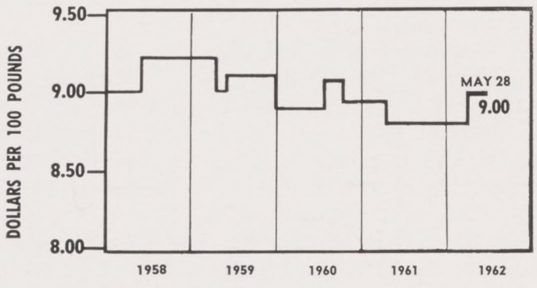
One month after the first irrigation, the difference in top growth was much less apparent, indicating that the early "growth spurt" due to warmer water is not necessarily a lasting effect.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

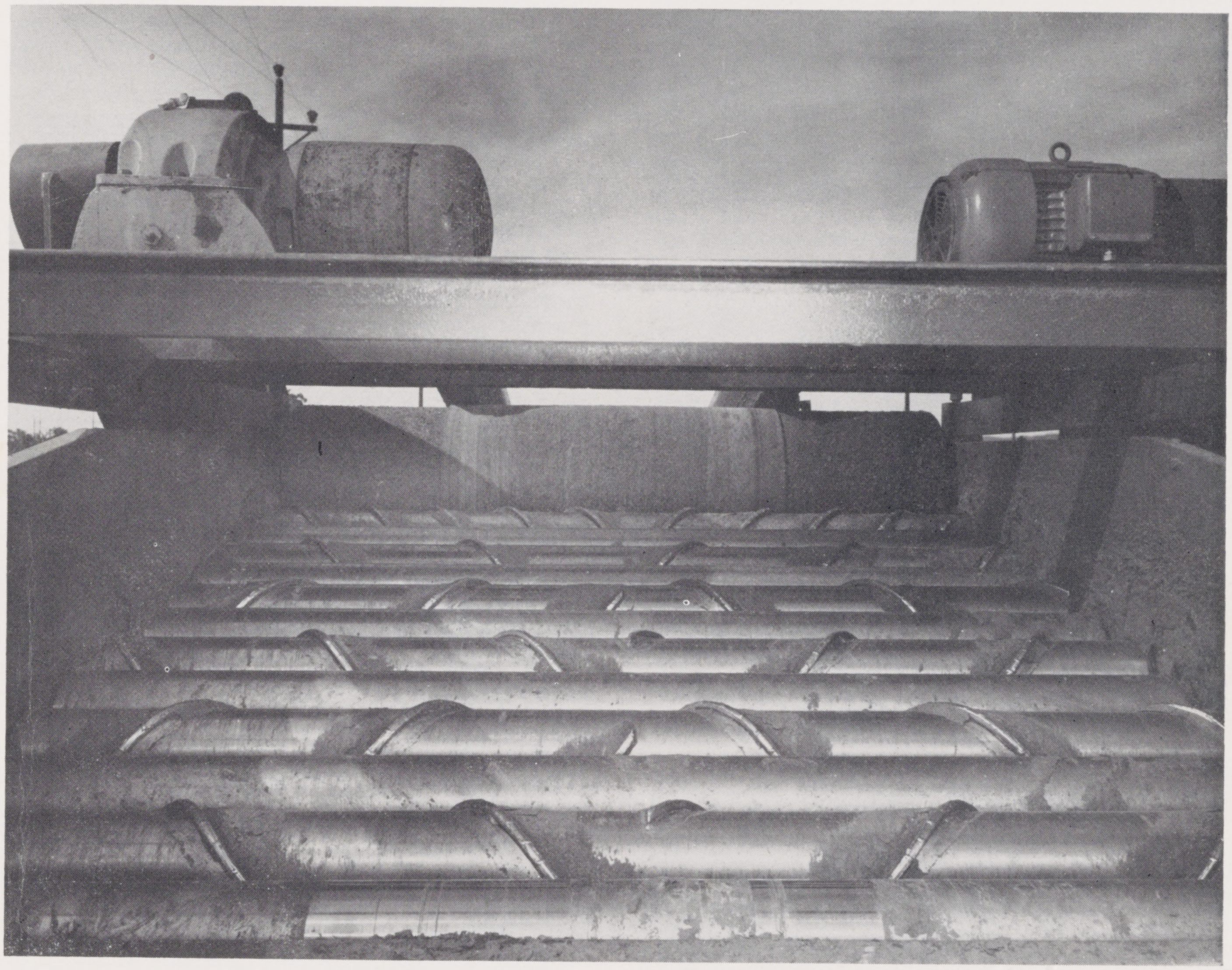
AUSTIN ARMER, EDITOR — SPRECKELS SUGAR COMPANY — WOODLAND, CALIFORNIA

SPC - DAVIS

PUBLISHED FOR CALIFORNIA SUGAR BEET GROWERS BY THE SPRECKELS SUGAR COMPANY

SPRECKELS SUGAR BEET BULLETIN

VOL. 26 JULY-AUGUST, 1962 NO. 4



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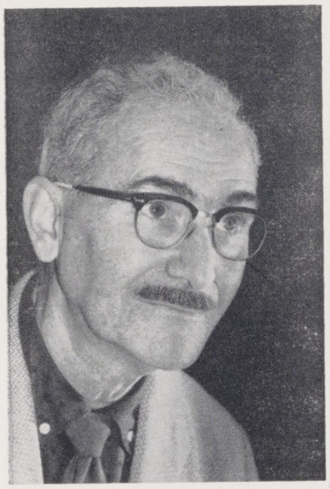
READY FOR YOUR BEETS

The cleaning screen at the Elmira Receiving Station is a symbol of the Spreckels policy dedicated to receiving and cleaning sugar beets with the very least damage to the beets and loss of time to our growers.

Growers can save time and money—for both themselves and their neighbors—by delivering a minimum of dirt and trash with their beets.

A CRITICAL LOOK AT MECHANICAL SUGAR BEET HARVESTING

By AUSTIN ARMER
Agricultural Engineer, Spreckels Sugar Company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IN CALIFORNIA, the mechanical harvest of sugar beets became universal as early as 1952. In the ten years that have elapsed since that time, growers have been beset by so many problems other than harvesting, that the general subject of mechanical harvest has been somewhat neglected. Approximately one-half of the California sugar beet acreage is harvested by contract operators of harvesting machines, so at least half of the state's sugar beet growers do not directly concern themselves with the performance of harvesting machinery. The other half have a good deal more to think about than harvester performance, so that a relatively small percentage of all our growers pay close attention to the quality of work done by harvesting in their beet fields.

Lack of this close attention to harvester performance has brought about a shocking deterioration in the quality of harvest. The members of the Spreckels Agricultural Department are reminded of this situation almost every day of the campaign, because they see the beets as they arrive at the receiving stations, and are under almost constant pressure from the operating department to improve the quality of beets received.

WHAT IS MEANT BY HARVEST QUALITY?

A perfect job of sugar beet harvesting would deliver to the truck nothing but sugar beet roots. It's as simple as that. But when it comes to the actual facts of life concerning sugar beet harvest, there are innumerable obstacles which stand in the way of perfect harvest. Our soil conditions, especially toward the end of spring harvest and throughout most of the fall harvest, tend to produce an enormous number of large hard clods. *No beet harvesting machine now in existence will eliminate all clods.* Unfortunately, some types of machines are much worse in this regard than others.

The next problem with foreign matter is that of weeds and weed roots. In this situation, it is rather difficult to blame the harvester, regardless of make, because how can any harvester tell the difference between a weed and a beet, especially if the weeds are of the single tap-root variety? This is a cultural problem—a built-in defective harvest has been grown with the sugar beet crop, because weeds were not eliminated early in the crop's growth.

A third item with regard to harvesting quality is the matter of topping. It is extremely unfortunate that so many machines called beet harvesters (Gemco, Farmhand, International, John Deere, etc.) are not truly complete harvesters. They are merely beet diggers and loaders, and depend upon a previous operation for removing tops. Let it be emphasized that the judicious use of multiple passes by a beater type defoliator can do a nearly perfect job of foliage removal. But let it further be emphasized that a nearly perfect job is of extremely rare occurrence. It is shocking to see the conditions of some fields which have been supposedly topped, and from which the roots are being lifted and loaded.

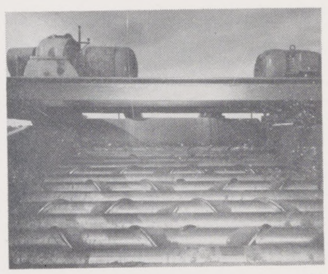
WHICH IS THE BEST BEET HARVESTER?

To answer this question, even if it were possible, would be in violation of company policy, which opposes the endorsement of any particular device. But it is only fair to point out that every make of sugar beet harvester sold in California is capable of doing a completely satisfactory job. It is only when field conditions are unsuitable for a particular type of machine that troubles develop. Examples are when lifter-loaders are permitted to harvest beets which have been improperly or inadequately topped, or when maladjustments of machines cause them to deliver more clods than necessary, or to improperly top the beets.

In the last few years there has been a tremendous upsurge in the popularity of lifter-loaders, preceded by beater-type toppers. This harvesting combination is capable of delivering perfectly satisfactory beets, but rarely does so, largely for two reasons: First, the lifter-loader is put into fields having extremely heavy dry soil which breaks up into big clods. Lifter-loaders using the wheel type lifter will always deliver excessive numbers of clods unless used in fields with friable, moist or sandy soil.

Second, machines of the lifter-loader type are frequently put into fields which have been improperly or inadequately topped. Here, the blame for poor quality harvest rests squarely on the operator's shoulders. It doesn't cost a dime an acre more to drive a properly adjusted beater type defoliator over a field than it does an improperly adjusted one. I have seen beater-toppers driven over fields with so many flails missing that nothing to speak of was happening as the tractor driver drove along. The inevitable result is virtually untopped beets.

Once-over machines (the Marbeet Model E-22 single row, and the new Marbeet Twin are the only commercial examples sold in California) are not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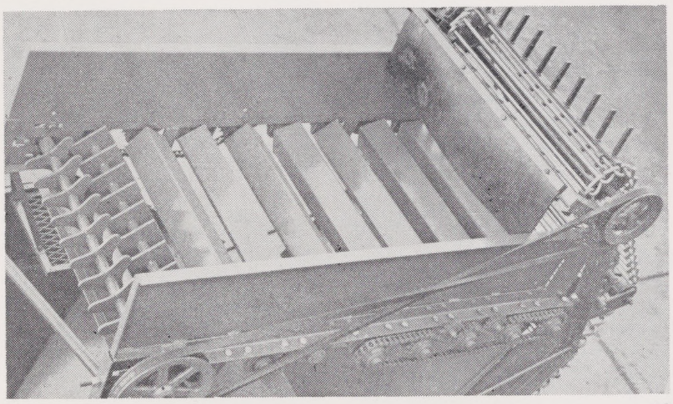
COVER NOTE—the cleaning screen at Elmira is the last word in dirt separation. The highly polished nip-rolls allow beets to pass over without damage, while weeds, weed roots, leaves and clods are broken up and discharged into the dirt hopper.
IN 21 DAYS OF OPERATION, during spring harvest, this screen separated 3,880,925 pounds of dirt and trash from 22,560 tons of beets. This vast quantity of dirt was hauled at growers expense and was forever lost from the topsoil.

completely free of guilt in the matter of clod delivery. The spike wheel principle is capable of delivering large and numerous clods—particularly the older two-row machines used by so many contractors in the Salinas and Imperial Valleys. But every Marbeet Machine, regardless of type or age, can be adjusted to do a very satisfactory job of topping. Thus if any beets delivered by a Marbeet machine contain adhering foliage (or conversely, are too heavily topped) it is clearly a matter of improper adjustment. Such maladjustment is quite inexcusable, since a simple turn of a hand crank is all that is necessary to position the topping disks to do a very good job.

HOW CAN HARVESTER PERFORMANCE BE IMPROVED?

Fortunately, the manufacturers of harvesting equipment and their dealers are not standing still on the matter of dirt delivery. It is no secret to them that their machines have been condemned in many locations because of the large amount of dirt delivered.

The Gemco machine was the first to show the results of some very intensive experimental work, through which the multi-roll screen such as used at Spreckels receiving stations was made available*.



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THE GEMCO multi-roll screen (an optional extra) eliminates as much as 67% of clods and dirt, as compared to the standard machine.

The multi-roll screen is optional on Gemco machines and is extremely effective under dirty conditions, even when the soil is quite hard and clods lifted by the wheels are quite large. Notice should also be made of the work being done by individual harvesting contractors and machine owners who have installed dirt and trash removal devices on their own machines with very good results in some cases (see "Notes From our Fieldmen" in this issue).

In designing the Marbeet Twin, some attention was given to dirt removal by providing the beet hopper with two potato chains; one at the bottom, which moved the beets outward at a somewhat faster rate than the elevator would take them away on its slower-moving chain. This differential speed of the two potato chains has a rather effective

Continued on Page 32

*Licensed under U.S. Patent No. 2,997,086, A. A. Armer.

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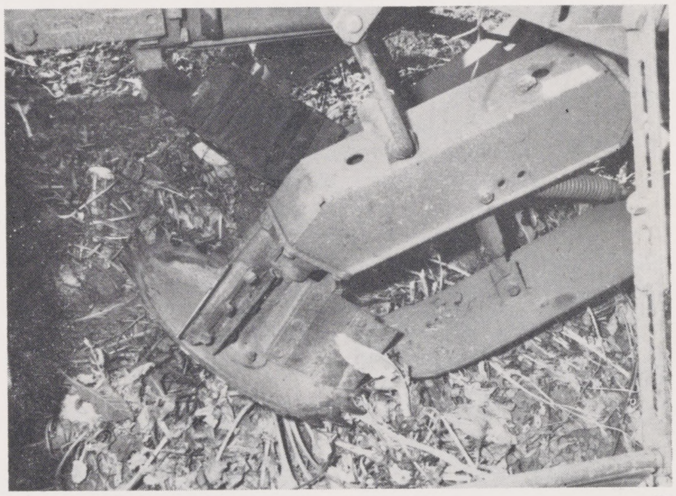
THE JOHN DEERE 223 Beet Harvester, drawn by a 4010 Diesel tractor travels at high speed—over 5 miles per hour in 5th gear.



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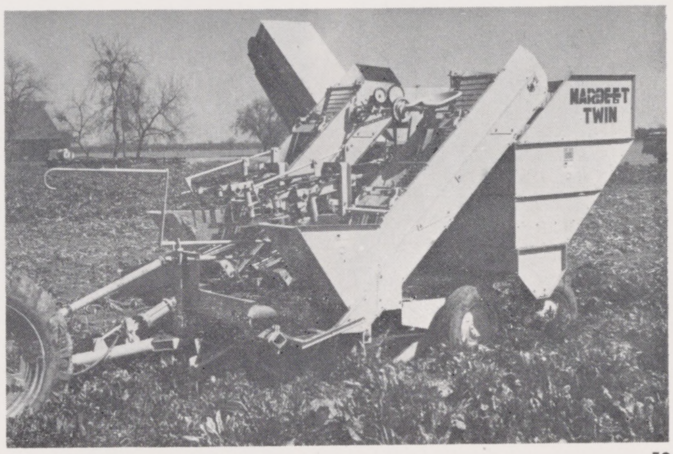
DISK TOPPER preceding the 223 Beet Harvester does a near-perfect topping job when beets are reasonably uniform in size and spacing.



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THE MARBEET TWIN is now in production; it embodies many design innovations which add up to complete beet recovery, good topping quality and low dirt delivery.

DISTRICT FOUR ESTABLISHED; AGRICULTURAL STAFF CHANGES

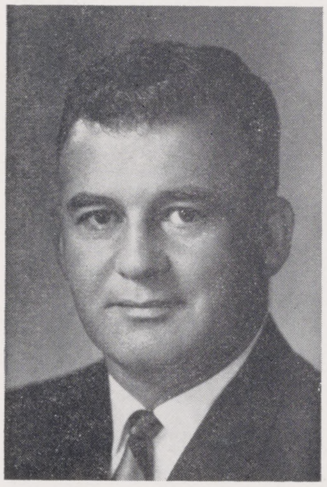
The construction of Factory 4 near Mendota marks the establishment of a new agricultural district to be known as District 4, Fresno. Temporary headquarters for the District 4 agricultural staff have been constructed adjacent to the factory site, and when the factory is completed, the staff will move into permanent quarters.

Members of the new District 4 agricultural staff have been transferred from other districts, and this has been the occasion for shifts in duties or promotions in Districts 1, 2, and 3, as shown in the tabulation which follows.

	District 1. SPRECKELS	District 2. MANTECA	District 3. WOODLAND	District 4. MENDOTA
District Managers	Walter Buckingham	Ralph S. Lambdin	Donald R. Hefner	Dan L. Dieter
Agricultural Superintendents	J. Byron Larson	John R. McDougall	William Duckworth	Stewart S. Anderson R. Bruce Duncan (B)
Field Superintendents	J. Norman Dawe James E. Gardiner Jay N. Hill Harold H. Voth Arthur C. Young, Jr.	John W. Bryan Virgil M. Horton Joseph W. Hull Ernest B. Moeller	Charles M. Carlson Michael Daugherty William H. Hodson Ben Marcum J. G. Maurer Gene Wilkenson	Dan Banta, Jr. Stanley Bayer Martin Chernek (B) William Hurley Vernon D. Sherwood
Assistant Field Superintendents	....	Roger McEuen	William W. Porter	Robert Alderson (B) Walter Titcomb

(B)—Bakersfield Office

DISTRICT MANAGERS, AGRICULTURAL SUPERINTENDENTS AND THEIR LOCATIONS.



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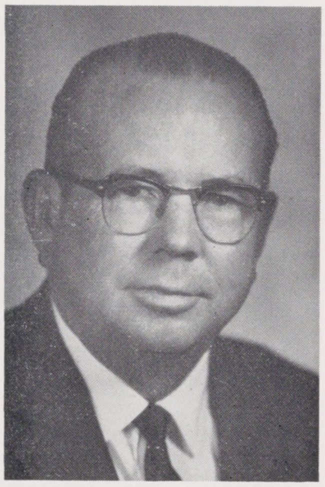
WALTER BUCKINGHAM will continue his duties as District Manager at Spreckels.



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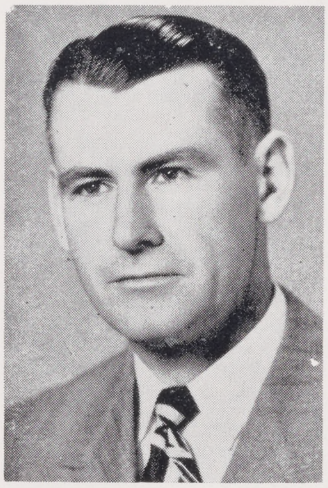
BYRON LARSON remains at Spreckels as Agricultural Superintendent of District 1.



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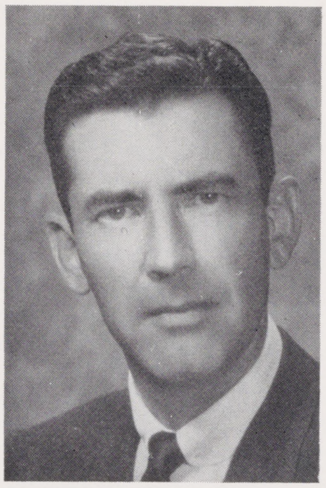
RALPH S. LAMBDIN is District Manager at Manteca, District 2.

56

JOHN R. McDOUGALL steps up from Field Superintendent at Woodland to Agricultural Superintendent at Manteca.

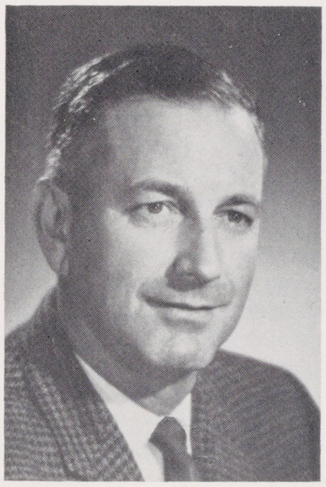
57

DONALD R. HEFNER, formerly Agricultural Superintendent of District 3, is now District Manager of District 3.



58

WILLIAM R. DUCKWORTH is now Agricultural Superintendent at Woodland, stepping up from Field Superintendent of the Tudor area.



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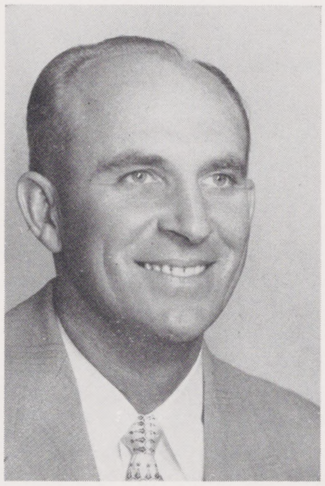
DAN L. DIETER, formerly District Manager at Woodland, is now District Manager of the new District 4, with offices at Mendota.



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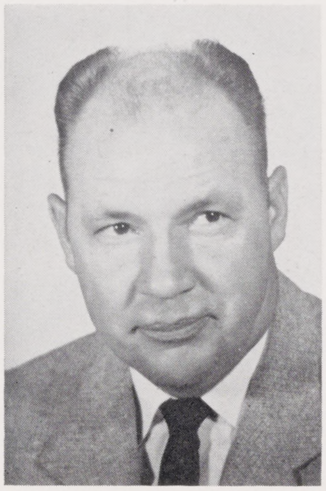
STEWART S. ANDERSON moves his office as Agricultural Superintendent from District 2, Manteca, to District 4, Mendota.

R. BRUCE DUNCAN remains at the Bakersfield office as Agricultural Superintendent. Bakersfield is included in the new District 4.



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Notes from Our Field Men

J. G. MAURER, WOODLAND

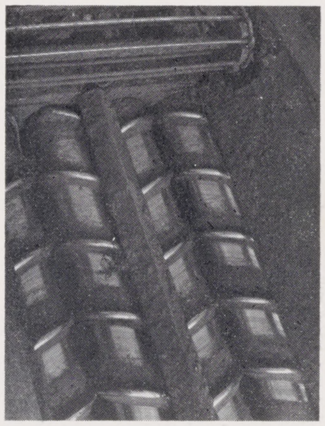
62

MARION SANCHEZ, Sucro grower, has installed a set of four nip rolls on his Farmhand cart-type harvester. The rolls are installed so that the beets travel down the length of the rolls instead of across the rolls as at our receiving stations. From all appearances the machine is getting nearly every bit of trash and watergrass. The dirt at the receiving station is only about 700 lbs. per 25-ton load of beets.

Marion has succeeded in obtaining the proper gear ratio to run the rolls at optimum speed. An auxiliary motor was installed to run the nip rolls and the cart conveyor. The power take-off units runs the digger conveyor.

Everyone who has seen this machine is enthusiastic about it, and I can visualize many growers making this adaptation on their own machines.

MARION SANCHEZ installed these axial-flow nip-rolls on his Farmhand cart model lifter loader; they eliminate much dirt and nearly all trash.



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W. J. HURLEY, MANTECA

64

WE HAVE HAD everything from wire, pop bottles, beer cans, parts of trucks, lumber, rocks, etc. go into the hopper at the Los Banos Receiving Station. This week we had the exception; a rattlesnake eighteen inches long made its way from the beet field to the receiving station without injury, and was ready for action when the hoist operator took it out of the beet hopper.

Notes from Our Field Men

VIRGIL HORTON, MANTECA

65

ED LAGORIO is one of my growers who has done an outstanding job in eliminating the dirt which is ordinarily delivered along with the beets from lifter-loaders of the Farmhand type.

Ed rebuilt his Farmhand machine, adding a pair of nip-roll augers as part of the elevator (see photos). These nip-rolls grind up most of the hard clods picked up by the lifter-wheels, but do not harm the beets.

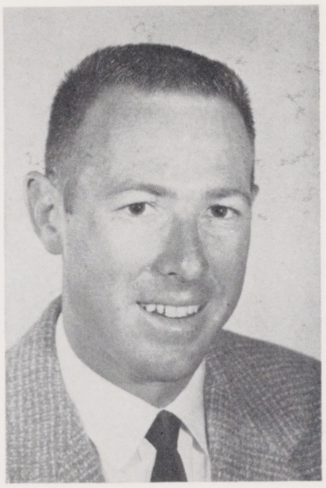
I made a comparison between Ed's converted Farmhand and a standard Farmhand, both working at the same time and in the same field, where soil and harvest conditions were alike. I recorded the beet and dirt weights from 15 loads delivered by each machine. Here are the results:

	Net Pounds of Beets	Pounds of Dirt	Percent Dirt	Average Dirt Per Load
Lagorio's Farmhand	310,630	7,380	2.37%	492 lbs.
Normal Farmhand	324,050	25,610	7.90%	1707 lbs.

The percent dirt figures show that Ed Lagorio's modified harvester delivered only one-third as much dirt as the standard Farmhand.

Not only does Ed's machine eliminate two-thirds of the dirt, but practically 100% of the trash (leaves, weeds, watergrass) is also left in the field.

MICHAEL DAUGHERTY, WOODLAND



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TWO OUTSIDE receiving stations, Sucro in the Dixon area, and Elmira in the Vacaville area, were compared for effectiveness of their screens in removing dirt. This was done to evaluate the new type of screen installed at the Elmira station. Elmira ran for twenty-one days this spring, and the data were compared with Sucro for the same period. The results showed that during this three-week period a total of 54,919 tons of beets went over the scales at the two stations. From these 54,919 tons of beets delivered, we removed 3,422 tons of dirt. To look at it in another way, this amounts to 6,843,707 pounds of California topsoil, equivalent to *two acre feet of soil.*

Remembering that this amount of dirt was received in only twenty-one days by two stations, think of the dirt delivered to us during both fall and spring harvest at all receiving facilities. This dirt not only costs us money to screen out and dispose of, but it retards the receiving station, resulting in slower operation and longer truck lines for growers to wait in. It costs growers money to haul this dirt to us, as most truckers are paid on the delivered gross weight across the scale. For the twenty-one day period in study, it cost sugar beet growers well over three thousand dollars in hauling charges to deliver this dirt to us. This figure is based on just the hauling charge of $.85, with no mileage charge considered.

66

THE MODIFIED Farmhand harvester delivers only one-third as much dirt as the normal machine.

68

ED LOGORIO points to one of the auger rolls which both clean and elevate the beets, crushing clods and removing trash.

FACTORY 4, MENDOTA -- A PROGRESS REPORT

Significant progress has been made on the new $16 million Spreckels Sugar factory now under construction 3 miles east of Mendota.

Since groundbreaking was begun last September, several construction milestones have been achieved. Among them have been . . .

. . . *Completion of the land preparation phase.* During this pre-construction period, the factory site was raised a total of four feet above its former height. In all, 400,000 yards of fill earth were packed into the area.

. . . *Water systems excavation near completion.* Basins for waste-water reclamation, fire protection ponds and percolation beds have been dug. Much of the earth from this 160 acres of excavations was used as fill and leveling in the factory site.

. . . *Building of service facilities.* During this phase 19,000 feet of railroad track was laid on prepared roadbeds. In addition to the main spur leading from the Southern Pacific line, the factory will be serviced by seven intrayard spurs. A sophisticated "hump," which uses gravity as motive power to shuttle empty beet cars to the storage area, is an integral part of the factory's rail service facilities.

. . . *Nearly* 15,000 *feet of pipe* has been placed underground to service the factory and a myriad of underground electrical conduits now honeycomb the site.

. . . *Erection of the shop complex.* This 22,000 square foot building houses the machine, electric, carpenter and plate shops and is the base of operations during the construction of the factory.

. . . *Dried beet pulp warehouse.* A marked addition to the San Joaquin Valley skyline is the 33,000 square foot pulp storage warehouse. The peaked roof of this majestic structure rises nearly 100 feet above the Valley floor. Capable of storing 10,000 tons of dried beet pulp, the building is temporarily used to shelter equipment awaiting installation.

. . . *Silver Slope diffuser.* This mammoth installation, which will weigh over one million pounds when complete, rests on a reinforced concrete foundation 15 feet thick.

Foundation work has also started on the main factory building and finishing touches are now being added to the shop and storage buildings previously erected.

With these preliminary projects behind them, construction crews at Mendota are now at work installing important components of the factory's power system, the lime recycling equipment and the sugar beet receiving facilities.

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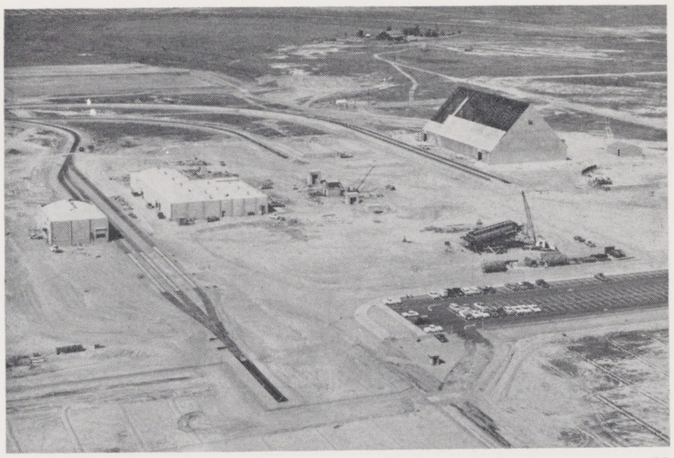

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AN AIRPLANE photo of Factory 4 as it appeared on April 24, 1962.

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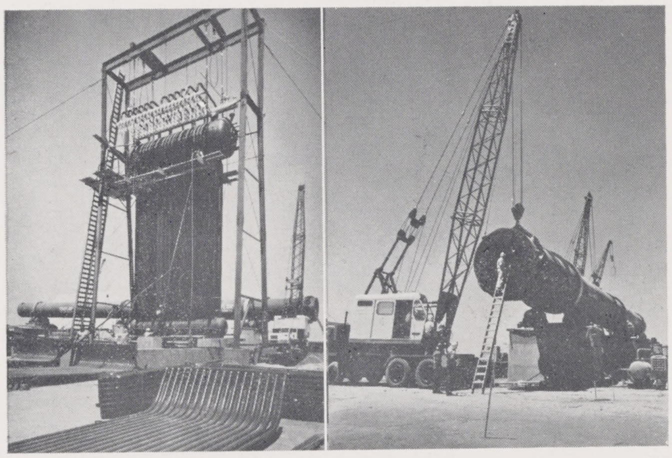
THE BEET SLAB will hold 10,000 tons of beets, Radial flumes will carry beets to a central main flume.



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THE BOILER contains nearly six miles of steel tubing.

THE LIME KILN features a steel tube 265 feet long.

. . . *Boiler Installation.* The new factory's principal power source is in the early stages of completion. Standing some sixty feet high and containing nearly six miles of tubing, this huge boiler system—total weight 210 tons—will be capable of generating sufficient power to turn the turbo generators necessary to provide electricity for a fair sized city.

The boiler is rated at 240,000 pounds-per-hour of steam. To maintain this output, the steam generating system will require 1,790 gallons of fuel oil each hour it is in operation.

. . . *Rotary Lime Kiln.* Meanwhile, the rotary lime kiln has been installed on its concrete foundations. Arriving at the factory site in three 90-ton sections, (each requiring two railroad flatcars), the kiln was lifted into place by crane and welded into a single unit 265 feet long.

The function of this kiln in the over-all operation of the factory will be to recycle the tremendous amounts of lime used during the carbonation process in sugar manufacture.

Lime used in the carbonation stage can be recovered; recycled in the kiln; and introduced once again into the sugar-making process, thereby greatly increasing the plant's over-all efficiency.

. . . *Beet Receiving Slab.* Construction of the sugar beet receiving slab is well underway. Up to 10,000 tons of beets will be accommodated at one time by this concrete and steel installation. Plans call for truck-hauled sugar beets to be unloaded into a king-size receiving hopper near the slab. The beets will then be conveyed to the slab and stored for short periods until they are flumed to the factory.

A CRITICAL LOOK . . .

Continued from page 27

churning action on the beets, and has been observed to leave as much as 800 pounds of broken clods in the field under the hopper while it was being discharged.

SOME CONCLUSIONS

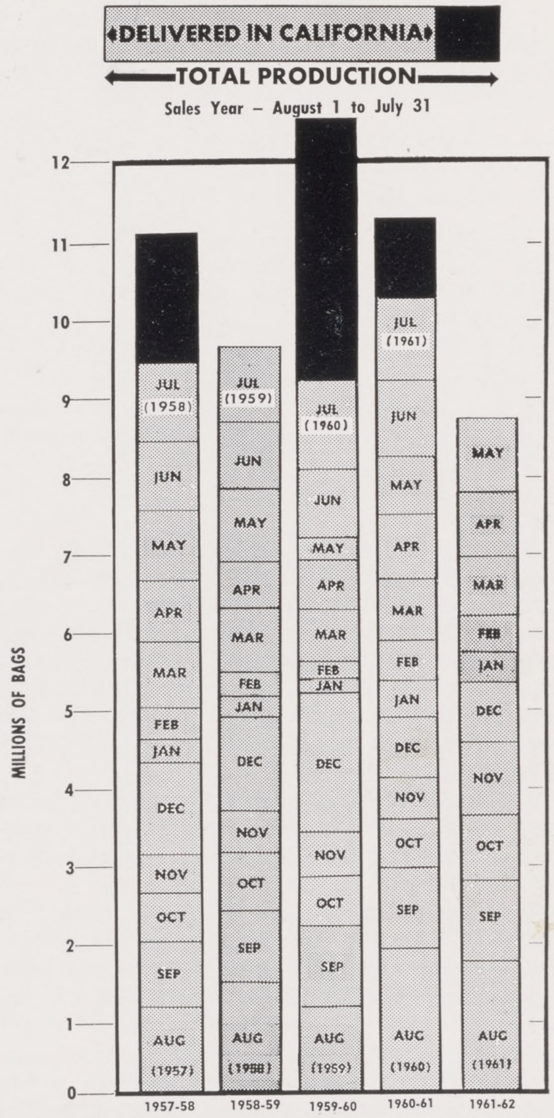
While every make of sugar beet harvester which can be purchased in California is capable of a thoroughly satisfactory performance, each type has its limitations with regard to field conditions.

Lifter-loaders inherently tend to deliver quantities of large, rock-like clods when the ground is dry. Because they are not responsible for topping, the separate topping operation must be done with care and with proper supervision.

Harvesters which top the beets after lifting tend to deliver fewer large clods, but topping quality depends on proper adjustment.

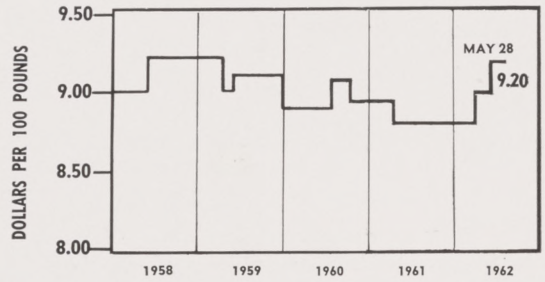
Any type of harvester will deliver roots; milo, alfalfa, bull thistle, water grass, or any other weed or non-beet crop growing in the beet row.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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AUSTIN ARMER, EDITOR SPRECKELS SUGAR COMPANY WOODLAND, CALIFORNIA

SPC - DAVIS

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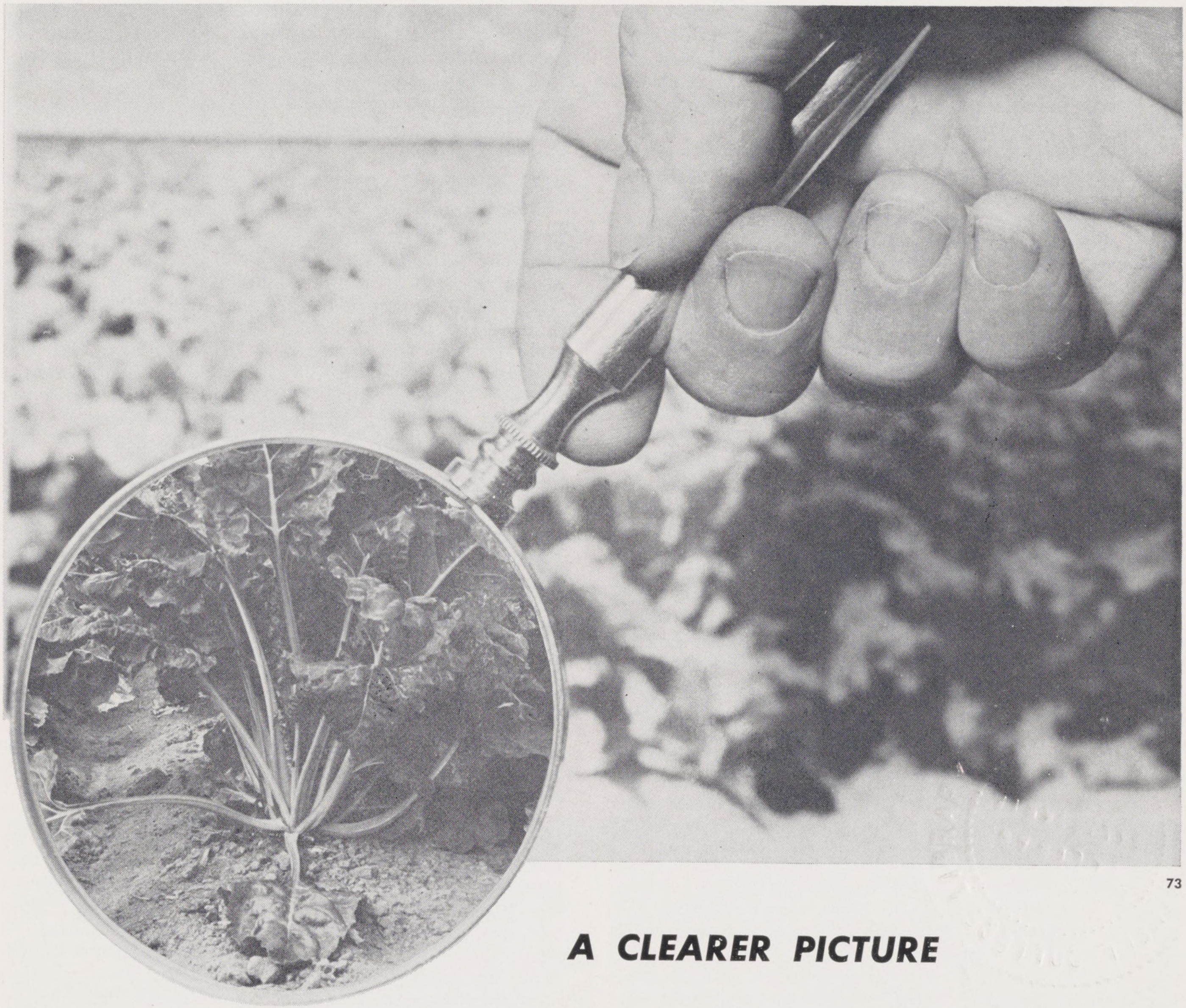
SPRECKELS SUGAR BEET BULLETIN

VOL. 26 SEPTEMBER-OCTOBER, 1962 NO. 5



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A CLEARER PICTURE

of growing sugar beets is revealed by Agricultural Research.

CLIMATE,
DISEASES, PESTS
AND CULTURAL PRACTICES

are all concerns of the grower. Spreckels Research helps the grower to maximize his yields and profits. See Page 34.

SUGAR BEET RESEARCH CAN HELP THE GROWER IN THE FIELD

By Dr. RUSSELL T. JOHNSON
Director of Research, Spreckels Sugar Company

THE SUGAR BEET plant, like any other living organism, is a product of both its inheritance and the environment in which it exists. In our Agricultural Research Program, we attempt to improve the inherited potential of the sugar beet by consistently working to improve sugar beet varieties. Many studies are continuing in an attempt to provide the best type of hybrid variety for each of the many conditions under which sugar beets are grown in California.

But we also study the many environmental components which affect beet production. Some of these are climate, diseases and cultural practices. The grower can do nothing about climate, something about diseases, and everything about cultural practices.

CLIMATE

Climate is one of the components of environment. Much effort has been expended in evaluating the effect of climate on sugar beet growth. These studies have been conducted by the University of California, by our own Company, and by many others interested in knowing the effects of climate on plant growth. In studying a factor such as climate and its affect on sugar beet growth, we are obviously unable to influence or modify the climate in which sugar beets are grown. But with sufficient knowledge we can better manage the sugar beet crop to make best use of the local climate. The sugar beet is a temperate climate crop. When temperatures reach 100° F. or higher, the beet does not develop well. The process of living, called "respiration," often burns as much or more energy than the plant can manufacture during these periods of high temperature. The extremely high temperatures in the San Joaquin and Sacramento Valleys in 1961 were partially responsible for the low production in that area. The beneficial effect of relatively cool temperatures is evidenced in the improved crop of beets produced in the San Joaquin Valley this year.

DISEASES AND PESTS

Several diseases and insect pests exert influence on the production of sugar beets in California. At this time the disease, virus yellows, is receiving much attention. Virus yellows is a term given to sugar beets which have either or both of two yellowing diseases and often a closely associated disease called sugar beet mosaic. The two yellowing diseases have been identified as sugar beet yellows and western yellows. The only known way either of these diseases is transmitted among plants in commercial sugar beets is by aphids. These diseases are not transmitted in irrigation water or on farm machiney but only by the feeding of aphids. Many studies have been directed toward the control of aphids by use of insecticides. This attempt has been made with the assumption that if the aphids could be adequately controlled, transmission of the disease within a field would be retarded or stopped. There have been a few cases where aphid control has been good; but, even in many of these, sufficient numbers of aphids apparently survive to transmit the virus yellows disease. In view of experimental results we do not recommend insecticide treatment for aphids as a means of eliminating virus yellows.

Breeding studies to alleviate the virus yellows problem are being conducted by the United States Department of Agriculture as well as our own plant breeding program. While differences in the degrees of susceptibility exist between different strains of sugar beets, no true resistance is known. Some decrease in the damage from virus yellows may result from varieties with some tolerance to the disease. But this will not completely eliminate the affects of this disease.

PLANTING AND HARVESTING DATES

For several years growth studies on beets have been made to help determine the optimum time for planting and harvesting. Early in these studies it appeared that in some of our beet growing areas late plantings appeared to escape the virus yellows disease and produce better crops. This was particularly true in the sugar beet growing areas of the Northern San Joaquin Valley and the Sacramento Valley. Later studies on the aphid population reveal the reason for this escape of the disease, virus yellows, was that the aphid population almost disappeared by early May and, therefore, transmission of the disease was not possible. Late planting is not conducive to good sugar beet production in all areas, however. In the parts of the San Joaquin Valley where curly top is a constant threat, late plantings are often seriously damaged by curly top. This eliminates any possible advantage of late plantings to escape virus yellows. In any area where nematode is a problem, late plantings can be responsible for increasing the damage from this pest, thus losing any potential advantage from planting late to escape virus yellows.

In the Coastal beet growing areas of California the aphid population does not follow so consistent a pattern as it does in the Interior Valleys. For that reason, late plantings in the Costal areas do not provide assurance of freedom from virus yellows. From information such as this has come the recommended planting procedure for the various areas for which beets are grown for Spreckels Sugar Company. In the Coastal areas early planting is recommended to minimize the damage from nematode. An early planting in the Coastal areas is also conducive to early harvest of the crop. Since overwintering of sugar beets in the Coastal areas has not been demonstrated to be satisfactory, beets are not normally overwintered in these areas. Early planting in the San Joaquin Valley provides some assurance against damage from curly top. In areas of the San Joaquin Valley where water shortage is a problem, early plantings with the prospect of early harvest do appear to offer some definite advantage to both grower and processor. In the Northern San Joaquin Valley and Sacramento Valley late plantings have appeared to escape the virus yel-

lows disease without accompanying serious threats to the crop from curly top or nematode in *most* areas. (There are a few local exceptions.) Many of these late planted beets will be harvested late in the fall or go through the winter and harvested the following spring.

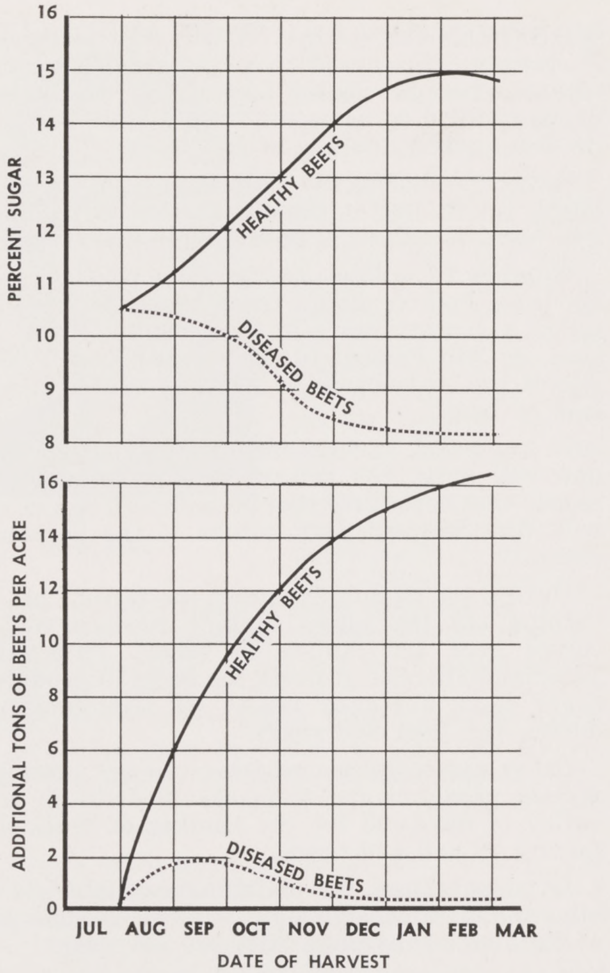
OVERWINTERING

In previous years we have reported studies on the growth of sugar beets during the winter. We have reported that growth amounts to approximately one ton of beets per acre per month through the winter months. It should be pointed out, however, that this growth occurs *only on healthy beets that are in good condition.* Beets that are diseased in the fall, or beets that go into the winter with severe moisture deficiency, or in an extremely weedy field, will not make this type of gain through the winter. Our studies have shown many times that beets that are diseased in the fall do not grow well during the winter. Some studies have even shown a decline on such beets. In those areas where beets are overwintered as a common practice, it is extremely important that all diseased fields be harvested in the fall; the earlier the better.

An extreme example of the differences in growth pattern of healthy beets compared with beets infected with both yellows viruses plus sugar beet mosaic occurred in some of our 1961 studies. The differences between healthy and diseased beets in these studies were exaggerated and complicatd with the effect of the extreme heat in the summer of 1961. The results of this particular study are shown in Chart No. 1. This chart shows the change in sugar content and tonnage of the two classes of beets (diseased and healthy) after August 1. The tonnage change shown in the lower portion of Chart No. 1 shows a steady increase throughout the fall months in the healthy beets. From August 1 to March 1, the healthy beets increased over 15 tons per acre. In the diseased beets, however, tonnage did not increase appreciably after August 1. The effect of disease on sugar content is shown in the upper por-

Continued on Page 38

CHART No. 1



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ONLY HEALTHY BEETS should be overwintered and harvested in the spring.

These curves are based on 1961 studies, and demonstrate clearly that diseased beets (Virus Yellows, Western Yellows, Mosaic) declined in sugar percentage after August 1. Tonnage increased slightly, then fell back to the August 1 figure.

Meanwhile, healthy beets continued to gain in both sugar content and tonnage, reaching peak values in February.

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AGRICULTURAL STAFF members from all districts observed the many field plots in the moisture-fertilizer studies. LEFT—the District 3 staff hear Spreckels Agronomist Jack Brickey describe the Tandy plots near Madison. RIGHT—Dr. F. J. Hills, U. C. Extension Specialist, describes experimental plots which have been inoculated with various diseases.

25 YEARS; 29 MILLION BAGS OF SUGAR

THE WOODLAND FACTORY, well along on its twenty-fifth consecutive campaign, is relatively young as beet processing factories go. Nevertheless, it has chalked up some impressive statistics during its first quarter century of operation.

Sometime during the 1962 campaign, the 29 millionth 100 lb. bag of sugar produced by the facility will leave woodland headed for the market place.

Number 29 million may go to a nearby cannery aboard a bulk or liquid truck. Perhaps it will end up in a grocery store in Sacramento, Reno, Portland, or San Francisco. Or perhaps it will become one of the ingredients in a box of confections or a loaf of bread.

In any event, the significant thing is that the sugar will enter the stream of commerce and the money that is paid for that 29 millionth bag of sugar will, for the most part, return to the Sacramento valley.

During the twenty-five years the factory has been turning out the sugar, factory workers have received over $20 million in wages. Payments to Woodland District growers for beets to produce the sugar have averaged nearly $7 million annually during the past five years.

Other expenditures necessary to get number 29 million produced and to market include an annual outlay of $674,000 for the hauling of beets to the factory by rail and truck.

Local purchases for maintenance materials, supplies and utilities, all bought within a 25-mile radius of the factory, average $537,000 per year.

Add to these the cost of expendable raw materials such as limerock, coke and fuel oil, plus the transportation of refined sugar to market, and the economics of the Woodland factory become impressive, indeed.

It is no wonder that in 1937, the new factory just opening in Woodland was being talked about in such glowing terms. Newspaper reports of the day describe the 1,400 people who attended the dedication of the new factory as "enthusiastic about the prospects . . . for economic growth to be brought about by this new industry." In the light of 25 years of operation, this enthusiasm was well justified.

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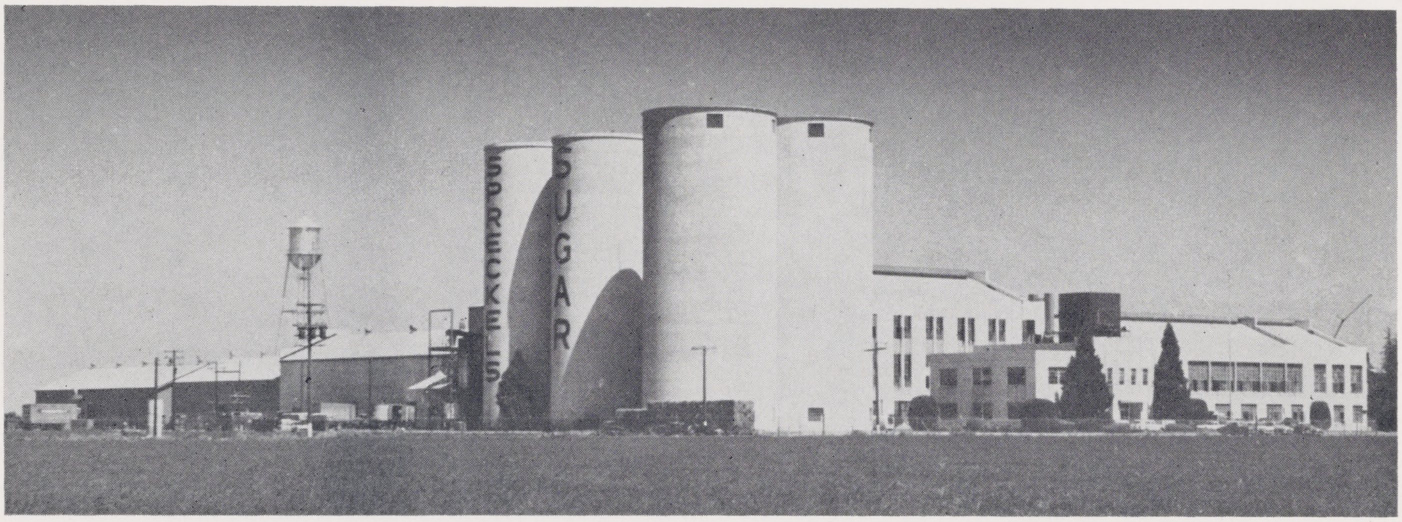
CASTLES IN THE AIR became a reality when Factory 3, Woodland, was completed in 1937.

Celebrating the 25th anniversary of this dream-come-true are Don Hefner, District 3 Manager; Mary Eve, 1962 Sugar Queen; and Ira Resch, Factory 3 Superintendent.



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THESE GROWERS WERE VETERANS WHEN THE WOODLAND FACTORY OPENED

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MORRIS CARDEN

THIRTY - TWO CONSECUTIVE YEARS of beet growing for Spreckels Sugar Company is the proud record of Morris Carden of Davis.

In 1930 Morris and his brother Robert Carden were engaged in a modest business of contract grain harvesting in the Sutter Basin. It was then that Mr. H. T. Carlson, of the Spreckels Sugar Company's Agricultural Department, suggested that they might find a more successful and glamorous career in growing beets. Accordingly they arranged to rent 211 acres of land about 10 miles north of Woodland. This event was the beginning of a success story highlighted by 32 beet crops which yielded a substantial profit.

In 1937 Morris and Robert went their separate ways. Morris leased a portion of the Armstrong property near Davis, and this began the nucleus for an expanding beet growing area. He rented additional land and eventually acquired several hundred cares of his own land west of Davis.

Morris related some interesting experiences in his beet growing career. Up to 1938 it was more or less the normal procedure for beet growers to occupy land on a three year lease, growing three consecutive crops of beets and leaving the depleted land. Morris Carden held to the belief that the grower had an obligation to the land. This philosophy was also shared by Ray Pendleton, who was at that time with the U.S.D.A. at the University of California, Davis. In early 1938, the concensus of observers had predicted a 10-ton yield on the Armstrong property. This was the inspiration for Morris to ask Pendleton to undertake some fertilizer experiments on 27 acres. A variety of granular commercial fertilizers as well as NH_3 in the irrigation water were applied at various rates. Uramon at 75 lbs. per acre changed the 10 ton prediction to a harvest of 22½ tons of beets with 18% sugar.

The efficacy of proper amounts of nitrogen combined with adequate irrigation water was abundantly demonstrated, and became established as a standard practice.

Constant row cropping, however, took its toll in soil compaction. Realizing this, Morris Carden initiated a program of green manure application, growing a winter crop of vetch and oats. The first year proved the merit of this plan, with a 25-ton yield. Another year of vetch and oats, with adequate

Continued on Page 40

Superior Photo Service 79

PAUL REIFF

AS A YOUNGSTER of nineteen, Paul Reiff found himself in the depths of a national and personal financial depression. Although just one year out of high school, he was $2,000.00 in debt for the treatments and medication necessary to control the diabetes with which he was afflicted. A part time job on Spreckels' Laugenour loading station north of Woodland kept the wolf from the door.

Paul's first love, farming, did not exhibit a particularly bright outlook either. Increasing numbers of small farmers were teetering on the financial brink throughout the Sacramento Valley.

Though not yet of voting age, Paul raised enough cash to pay the taxes due on a 67 acre parcel of farmland north of Woodland. He obtained the necessary financing from Spreckels to plant the land to sugar beets, and proceeded in his first year of farming to raise a crop of beets which yielded 23 tons per acre.

It wasn't really as simple as all that, however, for in order for his family to eat, Paul worked as a laborer and truck driver during the day and farmed his 67 acres in the evening and late into the night.

So excellent were the results of the first crop that Paul was able to pay off some of his indebtedness, lease 160 additional acres and plant a total of 225 acres to sugar beets in 1931.

Again the crop was a success.

By the time Spreckels opened the Woodland factory in 1937, Paul had become established as one of the largest individual sugar beet growers in the nation—and he was not yet 26 years old. By 1962 he had grown beets for 32 consecutive years. During 20 of these years, his two uncles, George and William Burger were his partners.

"The building of the Woodland factory brought a certain stability to the entire agriculture of this area," Paul recalled on the factory's opening 25 years ago.

"Sugar beets had been grown around Woodland long before the factory was built, but when Spreckels put up a multi-million dollar plant, the growers knew that beets were here to stay."

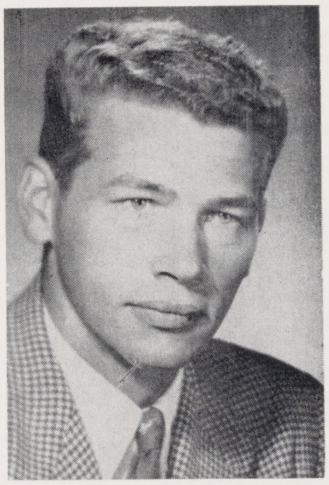
During his 32 years as a grower for Spreckels, Paul has witnessed a complete revolution in Sugar beet culture.

"There isn't a single tool used in sugar beet farming today that was in existence thirty years ago,"

Continued on Page 40

Notes from Our Field Men

J. NORMAN DAWE, SPRECKELS



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I was very much pleased with the progressive attitude of one of my growers this week. He has been doing some planning for next year's beet crop and was seriously interested in setting up his operation to include the use of a tine weeder harrow. His first thought was to plant his beets flat, as his sprinkler irrigation system would eliminate the necessity of furrows and beds. However, after some discussion of the problems associated with ponding of water from natural and irrigation sources, we compromised on the thought of putting in a very shallow furrow, or corrugation, at the time of planting. This procedure would provide as flat a surface as possible to pull the tine weeder harrow with a wheel tractor. Plans are far from final, but this type of thinking at this time of the year is a pleasant thing for me to discover.

CHARLES CARLSON, WOODLAND

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I advised a grower to stop a commercial harvester on the first day of my 1962 harvest. This cart type lifter - loader was working in dry compacted soil. When it went deep enough to dig the beets, 50% of the load of beets was solid rocklike clods that went right into the sample bag and railroad car. In an effort to eliminate the clods, the digger was run at a shallower depth. Then the beets were broken and mutilated, with many left in the field.

This machine was replaced by a spike wheel type harvester, and an acceptable job of harvesting was done in spite of the adverse condition of the soil.

This story has a happy ending:

The commercial operator with the first machine was grateful because in spite of his effort to do a good job he had the wrong machine for existing field conditions.

The grower finished his harvest with more profit to himself by having the right machine for the harvest condition.

Spreckels Sugar Company had less clods and trash to eliminate from the beets before processing them into sugar.

There is nothing wrong with the lifter-loader type harvester. It can be used if the grower will time his irrigation to condition the soil before harvest. Late irrigation, ten days to two weeks, before harvest will get more beets and less clods into the truck without affecting the sugar content. Drying out beets to get more sugar percent will only result in leaving more beets or parts of beets in the field with little or no increase in sugar.

SUGAR BEET RESEARCH

Continued from Page 35

tion of Chart No. 1. On August 1 both healthy and diseased beets had sugar contents of approximately 10.5%. After August 1 the diseased beets declined in sugar content while the healthy beets continued to increase in sugar content throughout the fall and into the winter. These data represent the most striking example of growth differences we have ever found between healthy and diseased beets, and, as pointed out, was probably exaggerated by the extreme heat of the 1961 summer. This example does, however, point out the need for harvesting diseased beets early in the fall.

ROTATION AND NEMATODE

In any areas where late planting is considered, extreme care should be given to rotation practices. One of the main reasons for this concern is the constant threat of nematode in sugar beet growing areas. Late planting of sugar beets in land infested with nematode is inviting disaster. To prevent the build-up of nematode on sugar beet land, all growers should discontinue the practice of having successive beet crops in the same land, and all tillage or harvesting machinery should be thoroughly cleaned before moving it to another field.

INSECT CONTROL

If chewing insects such as worms or beetles of various types become a problem in the fall, proper insecticidal measures should be taken to eliminate them. Conditions for growth of beets and sugar production are often rather good in late November and December when we are not harvesting beets because of rains; however, if beets in the ground during this time are defoliated by insects they are not capable of utilizing the good growing weather for increased root weight or sugar production.

IRRIGATION AND FERTILIZING

During the past few years a considerable emphasis has been placed by our Research Department on studying the effects of irrigation and fertility; primarily nitrogen fertility. Studies have indicated that in many cases nitrogen available to the sugar beets was in excess amounts. This has usually been found to be due to a combination of residual nitrogen in the soil which remains from previous crops,

plus the addition of nitrogen to the sugar beet crop. This abundant nitrogen, when present at the time of harvest, prevents the sugar beet from producing its maximum amount of sugar. Compounding the effect of nitrogen in some areas is, also, shortage of water. The statement has been made that in some places we attempt to fertilize for a prospective 30-ton crop of sugar beets but irrigate only for a prospective 15-ton crop. Water is the medium which conveys all of the plant nutrients from the soil into the beet root. Any fertilizer absorbed in the roots of the plant must be dissolved in water to enter the plant. This fact should then bring to mind the importance of keeping the soil moist so the root zone is continuously in an area where soluble nutrients can be readily absorbed and utilized by the sugar beet.

An illustration of the relative effects of irrigation frequency and nitrogen fertilizer application is presented in Table No. 1. These results are from a

TABLE 1.

The effects of irrigation frequency and nitrogen fertilizer application on an experimental plot of sugar beets in the San Joaquin Valley in 1961.

LBS. N. APPLIED PER ACRE	50	130	180	240
Sugar Content, %	15.7	15.3	14.8	14.2
Tons Beets per Acre	15.8	19.2	20.3	20.0
Tons Sugar per Acre	2.49	2.92	2.99	2.82
DAYS BETWEEN IRRIGATIONS	**13**	**17**	**25**	
Sugar Content, %	14.7	15.1	15.1	
Tons Beets per Acre	21.1	19.5	15.9	
Tons Sugar per Acre	3.10	2.94	2.39	

Note that nitrogen in excess of 130 lbs. per acre gave no significant increase in sugar per acre—even a decrease.

Note also that increasing the interval between irrigations seriously decreased the sugar per acre.

replicated experimental test in which four rates of nitrogen application and three irrigations frequencies were used. The amounts of nitrogen applied were 50, 130, 180 and 240 pounds per acre. Irrigation applications were made at 13, 17 and 25-day intervals. These irrigation frequencies were referred to as wet, medium, and dry, resepctively. It can be seen from Table No. 1 that irrigation frequency had only moderate effect on sugar content. The extremes ranging from 14.7% in the wet treatment to 15.1% in the medium and dry treatments. The effect on tonnage, however, was more pronounced. There was over a five-ton increase between the dry and wet irrigation treatments, and the medium treatment produced slightly less tonnage than the wet treatment. It is questionable whether the increased production of the wet treatment over the medium treatment was sufficient to justify the additional irrigations to keep the soil that wet. The increased production of the medium treatment over the dry treatment, however, would certainly appear to be worthwhile.

The nitrogen application shows a quite different effect than the irrigation frequency effect. There is a consistent decrease in sugar content with increasing nitrogen application. Sugar content on the 50 pound application was 15.7 while the 240 pounds reduced sugar content to 14.2%. The effect of nitrogen application on tonnage indicated the 50 pound rate of application was too low for the best production. All three of the higher rates, however, produced yields that were not significantly different from one another. In this particular test, it would appear that the best application was 130 pounds of nitrogen with the medium irrigation treatment.

HOW MUCH NITROGEN?

The question may arise among growers as to how we can determine the optimum nitrogen and moisture level for his particular condition. We have suggested many times in the past the use of strip applications of fertilizer to evaluate your own beet fertilizer needs. These need not be complicated fertilizer tests, but merely strips of varying amounts of fertilizer; some of which are less than your standard application and some of which are at rates higher than your standard application. In most cases the effects will be obvious by simply observing the foliage. If no differences exist throughout the season in the foliage size or color in any of the strips, it is quite probable that excess nitrogen is available to the beets and growers should consider, in this case, reducing the nitrogen application on subsequent beet crops. If, however, differences in foliage, color, or size do appear among these strip applications, action can be taken, if necessary, to use additional fertilizer if the earliness of the deficiency justifies this action. The best measure of the optimum irrigation schedule should be to never let the beets suffer from moisture deficiency. Alternate periods of rapid growth and retarded growth are not good for beet production. The best crops of beets are those on which growing is never hampered by cultural practices.

HARVEST

As harvest proceeds in the fall, and particularly under conditions of a rather strict delivery quota, care should be taken to prevent defoliating of the beets too far in advance of the harvester. Certain fields have been observed in which defoliation has occurred as much as a week prior to harvest. When the tops of a beet are removed the mechanism for its manufacture of sugar is also eliminated. All of the cells inside the sugar beet, however, are still living even though the top has been removed. With out the mechanism for continuing the manufacture of sugar these cells continue to consume the sugar stored in the beet. For this reason the process of defoliating too far ahead of the harvester is conducive to serious sugar loss in the beet crop.

Timing of the last irrigation before harvest is a subject of great importance. Whenever beets are irrigated, top growth is accelerated, and sugar stored in the roots may be withdrawn into the growing foliage. Consequently it is unwise to irrigate too close to harvest—some time should elapse for sugar content of the roots to recover.

However, an even worse condition is created if *too much* time elapses between the last irrigation and harvest. After a certain period, the soil may become so dry that the harvester, regardless of type, must inevitably deliver an intolerable number of large, rock-like clods.

Good judgement in timing the last irrigation with regard to harvest date can maximize sugar per acre and minimize the dirt delivered by the harvester.

MORRIS CARDEN

Continued from Page 37

nitrogen and irrigation water turned out a 27-ton crop.

Morris relates a number of firsts in Sacramento Valley agriculture—the small two-way plow for the row crop farm, gated syphons for irrigation, bed planting on levelled land, and the use of sleds for accurate row alignment of planting, cultivating and thinning operations.

The Carden success story includes two very attractive married daughters, two grandsons and five granddaughters. The proud grandparents, Morris and Elizabeth Carden, now live in a beautiful new town house in Davis.

PAUL REIFF

Continued from Page 37

he declared recently.

And of all the many tools developed in the past quarter century the most significant according to Paul, has been the development and refinement of the mechanical harvester.

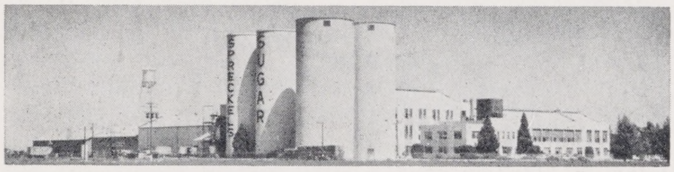
"Mechanical thinners, monogerm seed, and the establishment of the domestic seed industry have certainly played an important part in making beet growing what it is today.

"But the development of a machine that can do the back-breaking work of a hundred men certainly must be singled out as the biggest advance thus far in my career as a beet grower." he stated.

Even after thirty-two years, a certain romance remains between Paul and the sugar beet.

"I regret not having the opportunity to go to college," Paul confessed recently. "But if I had it all to do over again and the circumstances remained the same, I would follow the course I took in 1930."

"I've learned a lot from farming, and it was that first crop of sugar beets that started me on my way."



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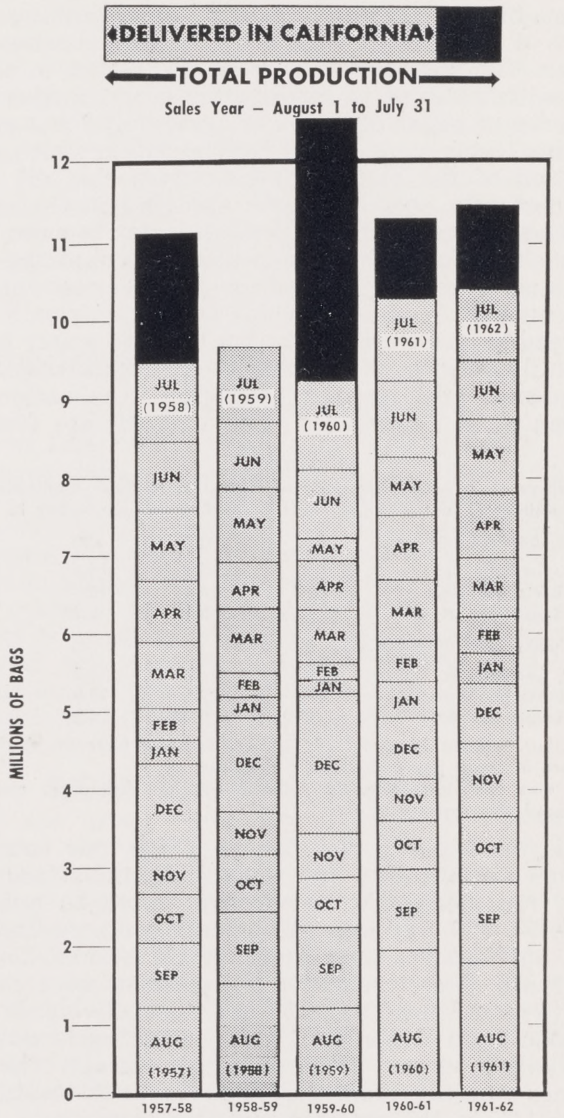
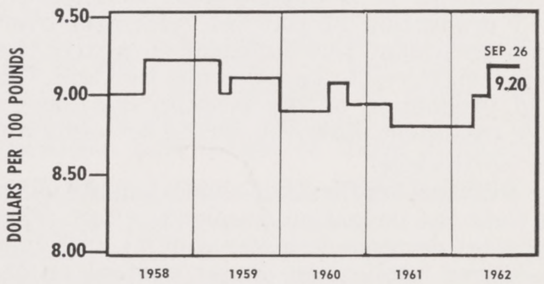
PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers.
Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

AUSTIN ARMER, EDITOR — SPRECKELS SUGAR COMPANY — WOODLAND, CALIFORNIA

SPC - DAVIS

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SPRECKELS SUGAR BEET BULLETIN

VOL. 26 NOVEMBER-DECEMBER, 1962 NO. 6

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PLANTING TIME

—time also to consider the application of

FERTILIZERS
FUNGICIDES
WEEDICIDES

with the seed. Lower thinning and weed control costs can result from this practice. See page 42.

PRE-EMERGENCE WEED CONTROL IN THE SUGAR BEET FIELD

By F. B. CALDWELL

Agriform Farm Supply, Inc.
Woodland, Calif.

With the ever-increasing costs of hand labor, the use of chemicals for weed control is rapidly becoming one of the major items in the farming operation. Since our business includes the application of agricultural chemicals, we have had considerable experience, some good and some bad, with this problem of recommending chemicals for use in pre-emergence weed control in sugar beets. From our successes and our failures with these chemicals, we feel we have learned some, and I repeat *some*, of the reasons why the results are sometimes good and sometimes not so good.

The "good" results, we naturally would like to believe, come from our astute recommendations, but of course this is only part of the story. Intelligent recommendations are a prerequisite, but "results" are a combination of several factors such as choice of the right chemical, method of application, soil conditions, the farming practices of the user, and the always present help or hindrance from weather. Obviously "bad" results can come from an adverse condition of any one or combination of factors. In order to make a proper recommendation to the beet grower as to which chemical to use, there is pertinent information we should ascertain from the farmer and from personal inspection of the field to be treated. We should know, for example, what weed is the primary problem; what is the soil type and moisture level; is the soil high in organic matter; is the crop to be planted flat or on beds, single or double rows; will the early irrigations be by overhead sprinklers or surface furrows; what is the condition of the seed bed? We have *never* seen good pre-emergence control if the seed bed was excessively cloddy.

There are several new chemicals being field tested, but at this writing we shall concern ourselves with only those presently recommended and cleared by the U.S.D.A. for use on sugar beets. Some of these materials are quite volatile; thus a thorough mixing with and sealing of the soil is a *must*. Even with the non-volatile chemicals, a thorough mixing with the soil will insure better results. The roto-tilling type machine seems to do the best job of mixing the chemical with the soil.

Tillam, one of the more volatile materials, must be incorporated with the soil *immediately*. Discing has *not* proven as effective as roto-tilling. Tillam alone has given some excellent results on grasses and *some* weeds. Experimentally we have obtained better over-all results with a combination of this material plus Vegadex. Rates of application of any of these materials will vary with conditions, so no recommendations or suggested rates can be made.

Vegadex, in its liquid form, while apparently not as volatile as Tillam, should be incorporated in the soil to obtain its best results. The granular form of Vegadex has been as effective as the liquid in control of broad-leafed weeds and *some* grasses. Better results with the granular Vegadex will be obtained if the material is covered with soil rather than left exposed on the surface. Sunlight apparently causes the material to "break down" and lose its potency. Vegadex has appeared to work better on the lighter, sandier soils. If either the liquid or granular form of this material is surface applied, it is imperative that adequate rainfall or irrigation should follow soon after.

Endothal has given excellent control of both broad-leaf weeds and grasses, especially when combined with TCA. Endothal can be effectively applied on the soil surface, but must be followed with rainfall or overhead sprinkler irrigation to carry it into the soil to proper depths. The amount of rainfall or irrigation needed will depend upon the soil type. Endothal can also be effectively applied and incorporated into the soil at the time of listing the

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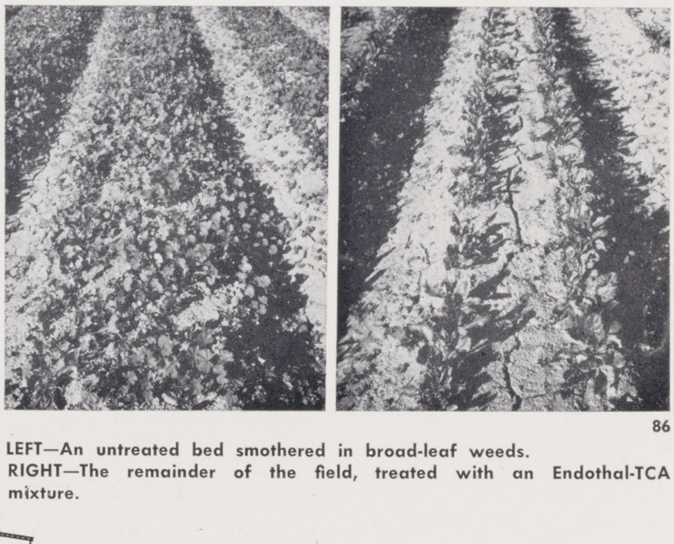
TILLAM is especially effective in the control of grasses; its effectiveness depends on thorough mixing with the surface of the seed bed by a rotary tiller.



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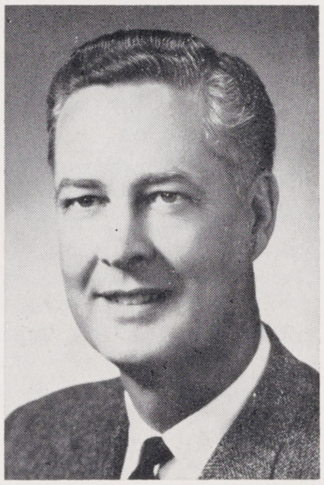
LEFT—An untreated bed smothered in broad-leaf weeds.
RIGHT—The remainder of the field, treated with an Endothal-TCA mixture.

DR. R. T. JOHNSON NOW VICE PRESIDENT



Hurl Swartz Photo 87

ON DECEMBER 5, the Directors of the Spreckels Sugar Company elected Dr. Russell T. Johnson to the position of Vice President. He will assume direction of all agricultural activities.

Dr. Johnson has been the company's director of research since March, 1961, and was in charge of agricultural research since his employment in 1950.

His achievements in the field of seed breeding have been noteworthy; his variety improvement program has led to the many outstanding beet seed varieties now available to Spreckels growers.

Dr. Johnson received his Bachelor of Science degree from the University of Utah, his native state. He served his country as a Marine Corps Captain during World War II, and completed his graduate work leading to the Doctorate degree at the University of Minnesota, majoring in plant genetics.

Dr. Johnson's new responsibilities will bring him from factory 1 at Spreckels to the Company's San Francisco offices.

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beds. The high degree of solubility of this chemical has caused some problems. Excessive rainfall or overhead irrigation can leach the material down below the soil area where the weed seeds germinate. In the case where the beets are planted on beds in *double* rows, furrow irrigation can "sub" the chemical up and concentrate it in the center of the bed away from the beet rows. This problem is *not* encountered in the single row plantings .

It is important for the beet grower to remember that these chemicals must be applied prior to germination of the weed seeds and that the soil area we are concerned with is mainly the "final" top four to five inches of soil depth of the seed bed. Thus if "clod-pushers" or "bed shapers" are used, this should be taken into account in determining the original depth of the chemical incorporation.

To recap our experiences on the chemicals mentioned: Endothal has given excellent control of both weeds and grasses; especially when combined with TCA. Tillam has been more effective on grasses than weeds, and Vegadex appears to be more effective on broad-leafed weeds than grasses. A combination of Tillam and Vegadex shows definite promise for good over-all control. However, contrary to what some growers apparently expect, none of these chemicals will perform miracles, and if improperly used, can affect seed germination and ultimate yields.

WHAT IS HAPPENING TO THE FARM LAND IN CALIFORNIA?

Editors Note: This is a thumbnail condensation of "California Going, Going---" by Samuel E. Wood and Alfred E. Heller; recommended reading for every grower and landowner.

CALIFORNIANS ARE beginning to recognize that the great asset of their state, the very goose that has laid the golden eggs of their pleasures and profits, is their land. This land, our bright land—the charm of its open spaces, the vitality of its soils—is the true economic base of our state, its attraction as a place to live.

California's physique is still fairly handsome. But it is angrily beset by increasing hordes of people, people named You, Me, Your Children, My Children, grouped into new communities or insinuating themselves into old ones. For when we say California is growing, we mean first and foremost that its population is growing.

The people are pouring in, across our borders, or out of our maternity wards, and the figures are well-known: 1,500 people per day, enough to occupy a small town; one-half million per year, almost enough to occupy today's San Francisco. By 1980, today's population of 16 million will have increased by close to another 16 million, enough to occupy the 13 major cities in California if they were vacant, plus almost enough left over to create a new San Francisco Bay area—if the site were available.

THE PROBLEM

With every daily increase of 1,500 people in California, 375 acres of open farm land come under the blade of the bulldozer, to be used for subdivisions, roads, industry, public and private facilities. This amounts to 140,000 acres annually. At this rate, we can expect three million acres of bright open land to disappear by 1980, under the searing progress of growth.

Which is all very well, except that it is neither desirable nor entirely necessary. Most of today's urban expansion is taking place, like wildfire, in scattered, needlessly separated development.

Although California has only three percent of the nation's farms, we produce 25 percent of the nation's table food. We supply 42 percent of the tree, nut and fruit crops, and 43 percent of its fresh vegetables.* Our annual agricultural production is worth $2.7 billion at the farm, and some $8 to $10 billion after it is processed and distributed. The food processing industry of California, which has a considerable degree of stability, is one of the three largest industrial groups in the state. Food processing remains the largest single industry in five of California's metropolitan areas: Fresno, Stockton, Sacramento, San Jose and San Francisco.

So we have a problem. It is the central problem

*- - - and 30% of its beet sugar
- - Ed.

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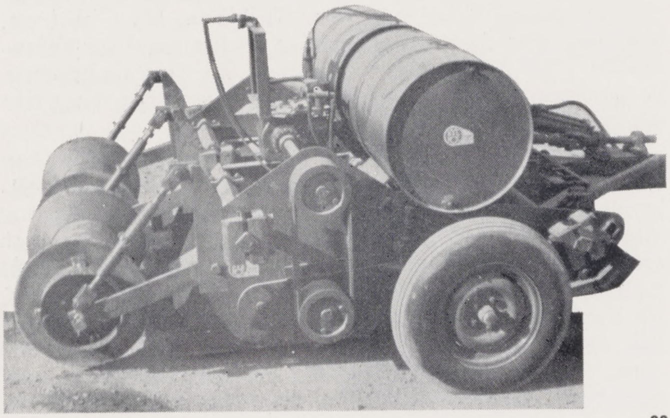
BYE-HOE TILLER-BED SHAPER OFFERED

ROBINSON BLOWER and Engineering Corporation of San Martin, California, have completed a year of manufacturing a modification of their well-known Bye-Hoe rotary cultivator.

The new Model T 3-in-1 Seed Bed Tiller combines a 2-row or 4-row Bye-Hoe Tiller with bed shapers, firming rollers and a complete liquid spray applicator. The machine is a ruggedly built, high capacity unit, suited to the large-acreage row crop grower or contractor who wants to apply herbicides, fungicides or fertilizers, thoroughly incorporated into the top surface of accurately formed seed beds.



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Notes from Our Field Men

ROBERT ALDERSON—BAKERSFIELD

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It is quite possible that a trend back to double row planting has started in Kern County. At least, the trend is in the direction of narrow row spacing whether the beds contain one or two rows.

The reasoning behind this seems to tie in with the rather short growing season allowed in the area and the necessity to produce more average sized roots in an acre rather than allow time for maximum root development.

Under sprinklers in the Conner district two growers narrowed the interval from 32" in 1961 to 24" in 1962. Sanders & Sanders average yield increased an average of 5.1 tons per acre and W. R. Greenlee increased 9.4 tons in 1962 over 1961.

MULTIPURPOSE SLEDS BECOMING INDISPENSABLE IN ROW CROPS

YEARS AGO about the only sled to be found on a western farm was a one-horse stone boat. Then came the sled planter, used for years in the Salinas Valley vegetable fields. But in the last few years sleds have come of age.

In the 1950's a few enterprising Spreckels growers built their own multipurpose sleds so that bed shaping, fertilizing and planting could be done in one single operation. But other growers visualized the benefits offered by a sled which would accurately retrace its original track. This principle made possible the timing of each operation (listing, bed shaping, fertilizing, planting, thinning, and cultivation) to suit the calendar and the needs of the crop.

In 1956, the K-C sled became available through implement dealers. This marked the transition from the farmer-built to the farmer-bought multipurpose sled. A patented feature of the K-C sled is its bed-following spools.

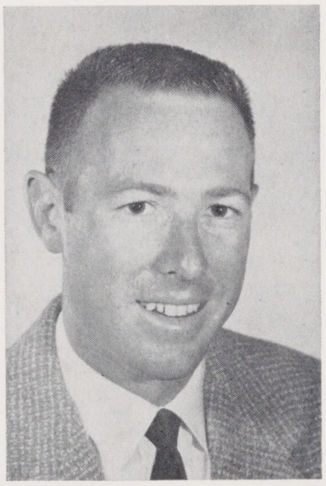
The Collier sled, developed in 1957 by Arnold Collier, a Spreckels grower at Dixon, made use of "pontoons", or specially shaped sled runners to obtain guidance along the furrows between beds.

In the past five years, the smaller specialty implement manufacturers of California have turned out hundreds of multipurpose sleds, creating for themselves a lucrative business and for their customers a virtual revolution in row crop farming.

The first full-line implement manufacturer to offer these sleds was Massey-Ferguson.

We present photographs of four representative makes of multi-purpose sleds. Their designers have stressed a variety of features, so that each make has its own individuality and special capabilities.

MICHAEL DAUGHERTY—WOODLAND



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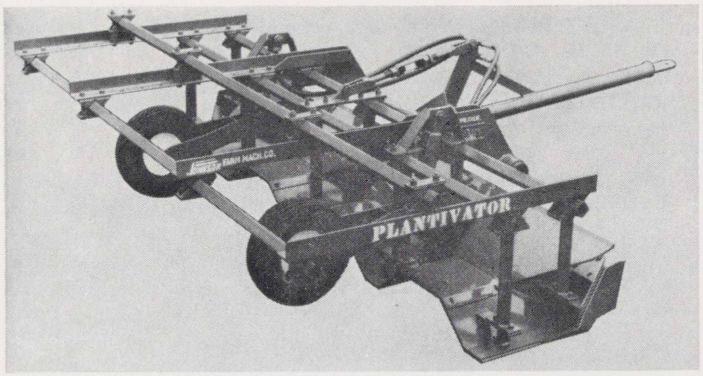
In completing the harvest of his field, one of my growers who this year switched from double row beds to single 30" rows said, "I'm only sorry that I didn't do this years ago, as there is no comparison in ease of operation, and the yield is better". In switching to the single 30" rows, he also went into a sled operation for his planting, thinning and cultivation. This is truly a big boost to our convictions, as this field was mechanically thinned with a Silver thinner and the grower said his total hand labor bill was less than $15.00 per acre.



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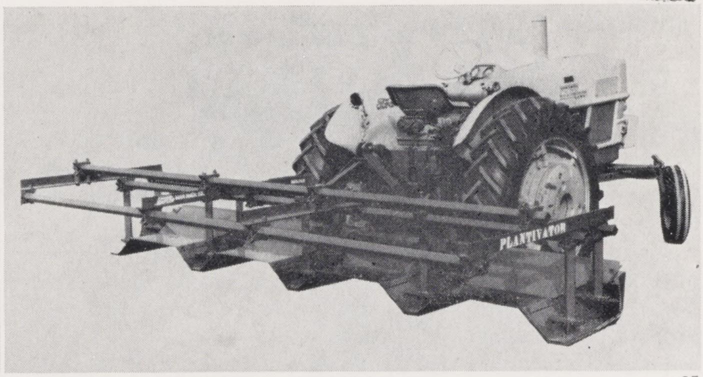
THE JOHNSON "PLANTIVATOR" (Pull-type above) shapes beds, plants, cultivates or thins, according to the tool set-up chosen.



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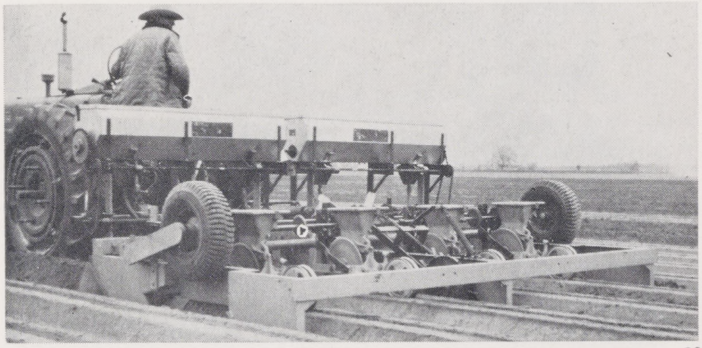
THREE-POINT HITCH models of the Johnson Plantivator are also available. All models have replaceable pontoon wear caps.



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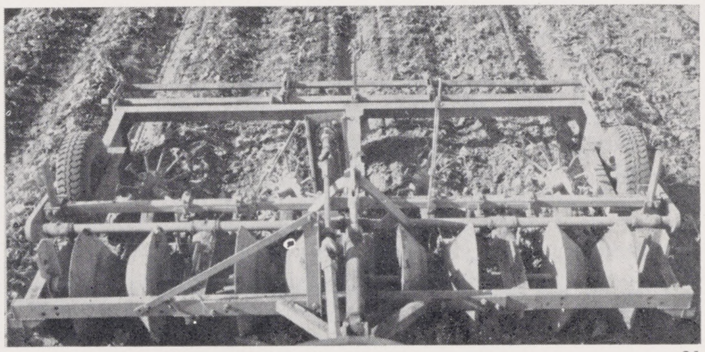
THE K-C SLED, as set up here, is shaping beds, applying pre-plant granular chemicals, and planting sugar beet seed with Milton planters.



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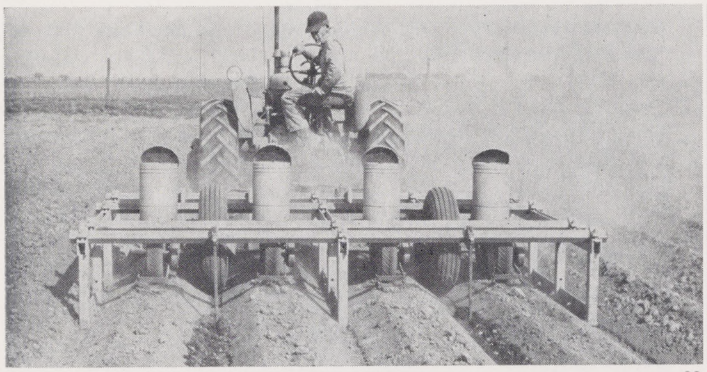
PATENTED FEATURE of the K-C sled is the spool-type guidance system. Sled shown above with Eversman thinning units.



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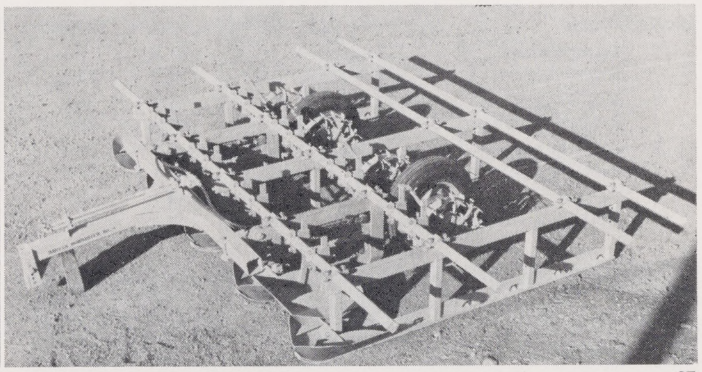
MARVIN ROWMASTER is a universal sled, heavily built and available only in the pull-type. Shown above with IHC planter units.



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THINNNG with the Marvin Rowmaster is as easy as bed-shaping, planting or cultivating. Shown above are Marvin Row Crop Thinner units.

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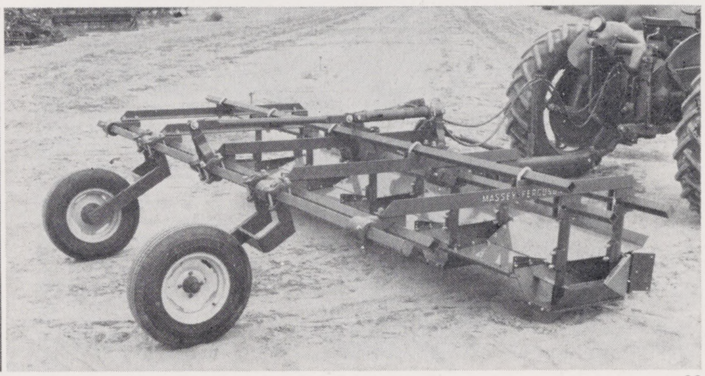
MASSEY-FERGUSON 147 Sled Tool Carrier, shown above with 3-point hitch and Milton beet seed planter units, with ground driving wheels.



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PULL-TYPE Massey-Ferguson accommodates ground wheels on either front or rear tool bar; furrow spacing adjustable from 30" to 42".

SIXTH ANNUAL 4-H SUGAR BEET PROJECT

THE 4-H SUGAR BEET PROGRAM conducted by the Agricultural Extension Service in cooperation with Spreckels Sugar Company completed its sixth successful year this fall.

Each youngster taking part in the project planted a plot of sugar beets in his back yard. Plots for beginners averaged 150 square feet; those for advanced members 450 square feet.

In late October, the crops were harvested. Yields were carefully recorded and laboratory samples were taken to determine average sugar content of each crop.

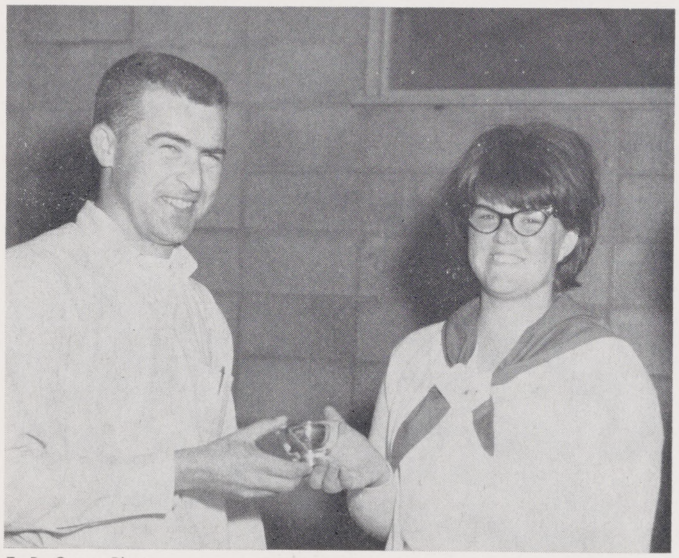
The beets were then processed at the Spreckels Sugar factories at Woodland, Manteca and Spreckels.

Highlight of the Annual Field Day came with awarding of sugar, processed from beets the young growers themselves had raised. In addition, each was awarded a handsome certificate for completing the project and the top grower from each club received an engraved silver sugar bowl.

During the day-long event, the 4-H club members toured the beet sugar factories, heard discussions on research and were honored at lunch.

First and second place winners in each Spreckels Agricultural District are here listed:

District	Name	4-H Club	Tons/Acre	% Sugar
1	Susan Schock	Del Norte	53.6	8.9
	Steven Piffero	Natividad	28.6	15.9
2	Dan Davis	Wildwood	44.1	11.5
	Richard Damilano	Waterloo	40.2	10.5
3	Keith Bergstrom	Main Prairie	33.7	12.6
	John Gorman	Yolo	33.1	11.0
4	Barbara Stumpfauser		63.9	13.1
	Nick Yeager		40.4	17.4



T. B. Green Photo 99

SUSAN SCHOCK of Del Norte 4-H Club receives her silver sugar bowl (first award) from ART YOUNG, Spreckels Field Superintendent.

Veteran sugar beet growers who may be envious of these outstanding yields can take cold consolation in the fact that the youngsters' plots were very small; from 150 to 450 square feet, and subject to beneficial border effects.

James Irvine Photo 100

MIKE LEAR receives the sugar he grew from MIKE DAUGHERTY, Woodland Field Superintendent.

Dave Carter Photo 101

TAK DATE, 4-H Club leader, and KATHY HILL load down EDDIE BRIGHT with sugar processed from Eddie's 4-H sugar beet plot, All are from Merced County.

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arising from California's growth, her population growth: what must we do to accommodate these people? Here are some estimates. Before 1980 we must find two million acres of new agricultural land (irrigated) to furnish the newcomers with food and fibre. In addition, *we must expect to turn into city land three million highly productive acres now being devoted almost completely to irrigated agriculture.* Replacing land removed from agriculture for urban growth and meeting land requirements for additional agricultural products will require more new land than all the land now being irrigated in the counties of Kern, Tulare, Fresno, Madera, Merced, Stanislaus, and San Joaquin. About five million acres.

THE SOLUTION

California could do a fair job of accommodating its ever-increasing population to its ever-limited lands. In order to do such a job we would, of course, have to make some basic decisions early in the game —decisions not being made now and not even being seriously contemplated.

We would have to decide where to locate our new urban areas, and how to contain, guide, and direct their growth, so that they are confined to those lands best suited for urban growth. We might have to decide how big a given city should be, in order to sponsor healthy home life, healthy business and beauty of our country side. We would have to decide to prepare and adopt comprehensive and coordinated land-use policies and plans for communities, regions, and the entire state.

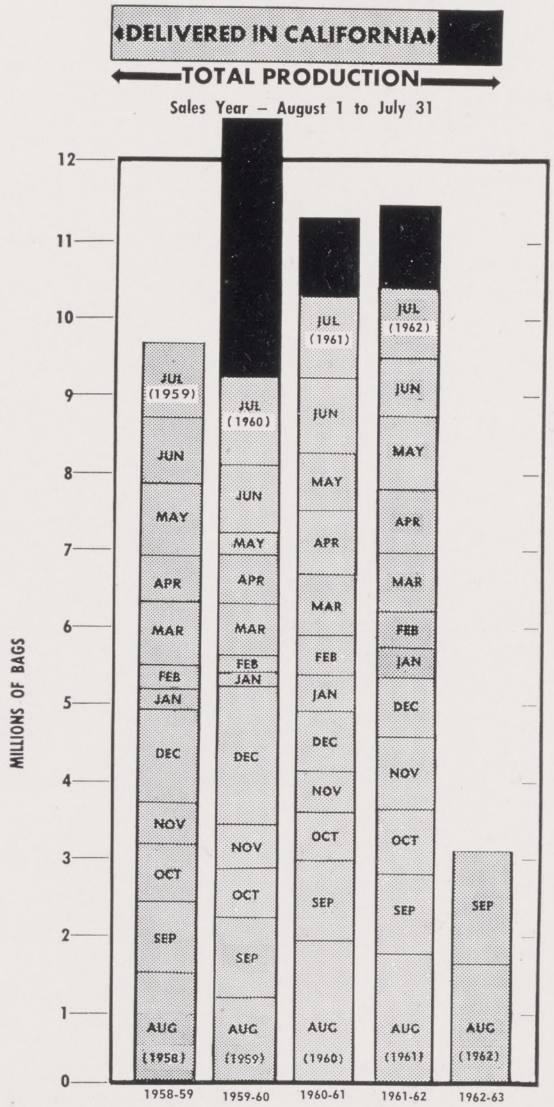
And Washington would have to join this grand, almost utopian effort at harmony and cooperation, for about 46 percent of California land is federally owned, and about two-thirds of all public expenditures in California are federal expenditures: Washington, it is clear, has no small influence upon where and how our state grows.

The job is difficult but it could be done. But California is growing at such a rate that every time the sun sets, the job gets more complex, more expensive.

A full-scale state planning program, backing up strong local and regional programs, would conform to the traditionally progressive nature of California government. California has, after all, pioneered in planning, in housing, in water development, in education and social welfare. By and large, Californians seem to believe in state government, and they find in their state government fewer weaknesses and debilitating conflicts than are found in most other states.

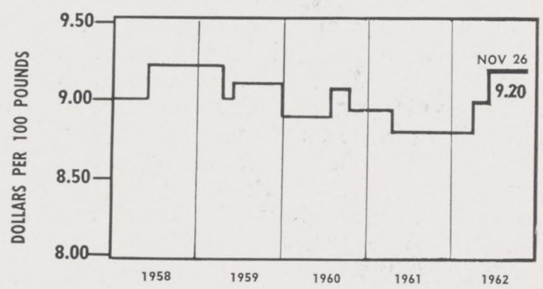
The new challenge must surely be met by further, decisive action in Sacramento and in all parts of the state.

PRODUCTION AND DELIVERIES OF BEET SUGAR IN CALIFORNIA



QUOTED PRICE OF BEET GRANULATED SUGAR

In 100 Lb. Paper Bags, F.O.B. San Francisco



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The SPRECKELS SUGAR BEET BULLETIN is issued bi-monthly by the Agricultural Department of the Spreckels Sugar Company as a service to its growers. Mention of specific methods, devices and implements does not constitute an endorsement by the Company.
All photographs by the editor unless otherwise indicated.

AUSTIN ARMER, EDITOR — SPRECKELS SUGAR COMPANY — WOODLAND, CALIFORNIA

SPC - DAVIS

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